MAY, 1952

Traffic Engineering

One-Way Terminus of Lake Shore Drive Expressway in Chicago

- Traffic Engineering in Sacramento
- Traffic Problems in Small Cities
- A New Highway Luminaire for Intersection Lighting
- Newark's Newest Indoor Parking Garage
- Off-Street Parking Space Requirements of Modern Shopping Centers (Reference Notes)

Official Publication of the Institute of Traffic Engineers

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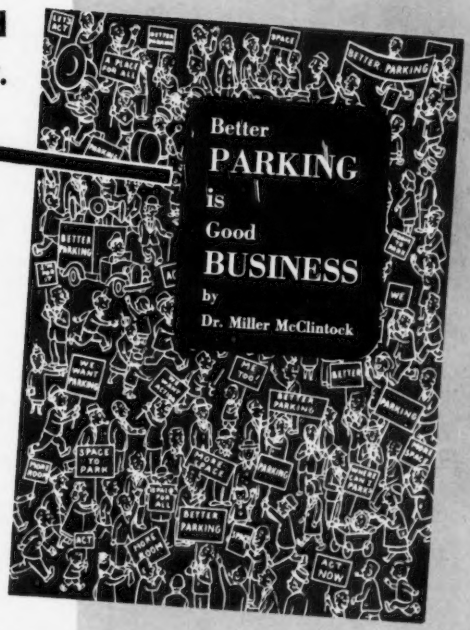

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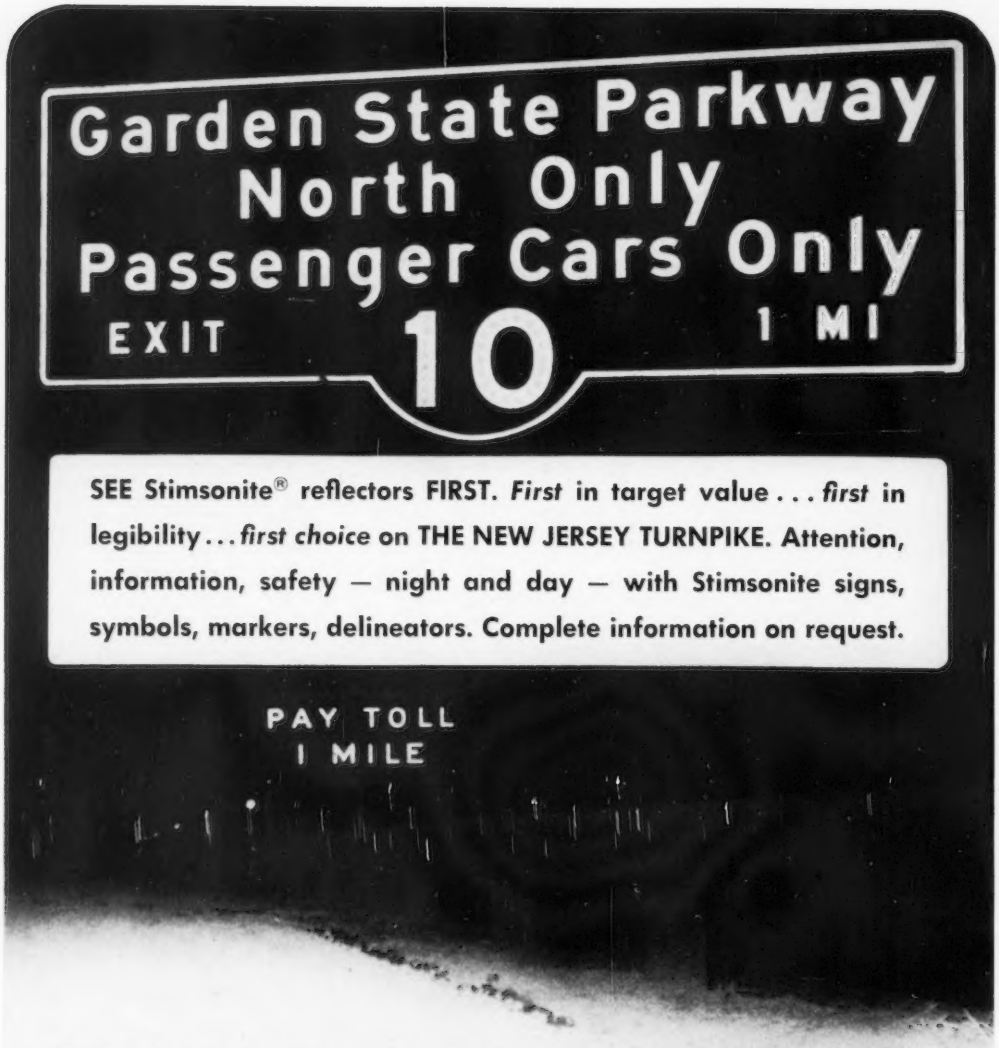
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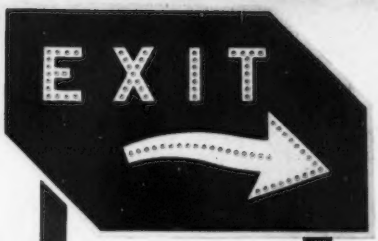

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Traffic Engineering

OFFICIAL PUBLICATION OF THE INSTITUTE OF TRAFFIC ENGINEERS

VOLUME XXII | MAY, 1952 | NUMBER 8

COVER: View of Foster Avenue looking west at Sheridan Road, showing traffic at the northern terminus of Lake Shore Driveway being channelized into Sheridan Road and Foster Avenue. The entire roadway width is assigned to the rush movement with counter flow detoured to enter Lake Shore at Lawrence Avenue, Chicago, Illinois.

Photo: Chicago Park District

Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

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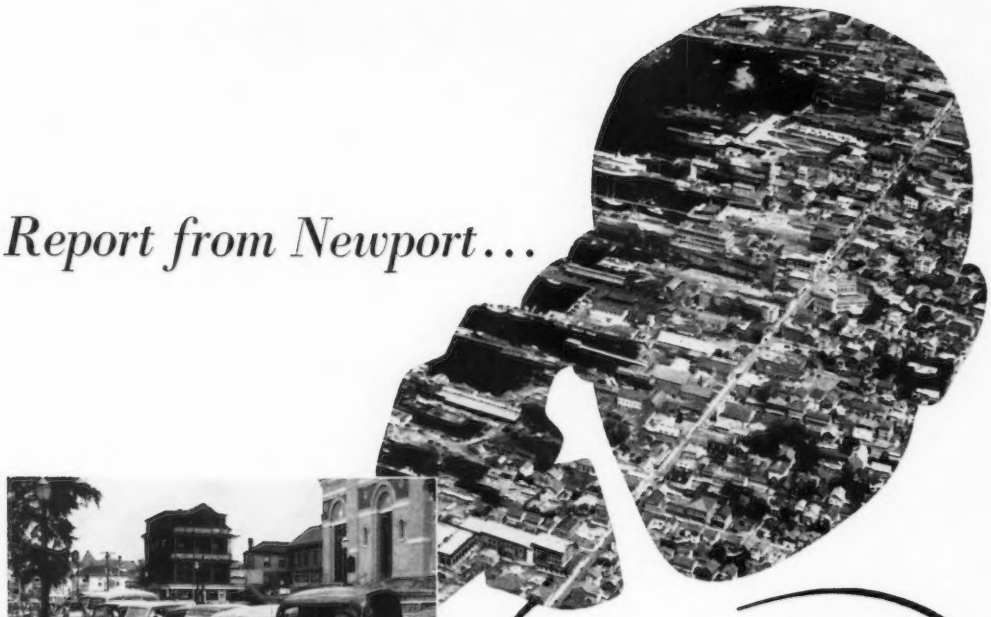
Report from Newport...



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Frankly Speaking

IN THE establishment of the Past Presidents' Award for Merit in Traffic Engineering, the *Institute* offers a great opportunity for Associate Members and Junior Members under 35 years of age to win recognition for special achievement in original research. It is an opportunity that should not be overlooked by any one who is eligible.

The young traffic engineer who wants to enhance his chances for advancement must face the fact that, barring luck, something more than mere industry and technical skill is required to assure recognition of his qualifications. To obtain recognition, and thus increase his chance for advancement, he should undertake to do something more than he is specifically required to do—something indicating original and independent thinking.

However, a special accomplishment such as an original independent research is not, by itself, always enough. It must be brought to light to receive the recognition it deserves. In the words of the poet, Thomas Gray: "Full many a flower is born to blush unseen, and waste its sweetness on the desert air."

The purpose of the Past Presidents' Award is to encourage the conduct of original research and to provide recognition for outstanding accomplishment. The winning of this Award is a high honor within the profession and brings with it the recognition that should be the goal of every Associate Member and Junior Member who can qualify.

Not only is the winning of the Award a high honor but in striving to win, the individual cannot help improving himself and adding to his store of knowledge. Even if he does not win first place it is an honor to reach the second or even third place.

Henry E. Riegel
Director

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Traffic Engineering in Sacramento

By D. J. Faustman (Mem., ITE)

Traffic Engineer, City of Sacramento, California

This is the twelfth in a series of articles to be published in "Traffic Engineering" magazine, and written by traffic engineers of cities of various sizes in several parts of the country. The population of Sacramento is 110,000.

BY far the greater proportion of the work performed by the traffic engineer and his staff has been devoted to spot improvements to existing traffic facilities. While these activities have achieved material benefits in increasing the capacity and safety of existing streets and intersections, the degree of improvement which can be obtained by these methods will, in the future years, show a steadily decreasing trend. As our city streets continue to carry an increasing burden of traffic they are rapidly approaching both the theoretical and practical number of vehicles which they are capable of carrying. Because of the limitations imposed by street widths, right-of-way widths, and block lengths and intersections, there are definite limitations to the increases in capacity which can be provided by spot improvements.

Before many more years have elapsed a number of the major arterials which carry traffic from outlying areas into and out of the central business district will have reached, and perhaps surpassed, their theoretical capacity. At this point a congestion will occur which will effectively discourage any further increases in vehicular traffic to the central business district, and may even cause substantial decreases. It is quite apparent that completely new facilities will have to be provided if traffic is to be kept moving through and about the city with relatively little congestion. It is also apparent that the mere widening of existing city streets will not be adequate to care for the increasing traffic volume.

Modern freeways which are capable of handling large volumes of high-speed traffic with both efficiency and safety have a number of characteristics which cannot be provided by any minor modification of the present city street system. One of the most important of these characteristics is the intersection which on a freeway occurs only at intervals of 1,200 to 2,500 feet and provides for complete freedom of movement in all directions without such congestion-causing devices as stop signs and traffic signals.

This means a major capital outlay will become a matter of necessity at a time much earlier than most people think. It does not mean that other improvements to the existing city streets can be neglected for they must continue to serve intra-area movements and act as feeders and distributors for the freeway.

In the analysis of the 1950 Traffic Safety Activities Inventory by the National Safety Council, it was reported that 12 of the 43 cities with populations of 100,000 to 200,000 had already constructed freeways as a part of their traffic improvement program. In the population groups above 350,000, 24 out of 27 cities have built or are building freeways, a fair indication that it is a necessary and effective solution to traffic congestion.

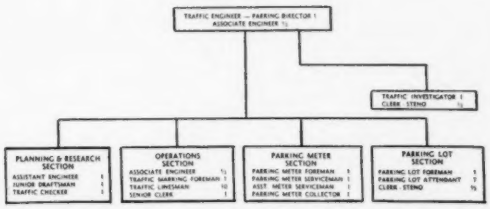

Fig. 1
Traffic Engineering Division, Sacramento, California.

It is hardly necessary to say that traffic facilities must not only be planned but also built and operated on a metropolitan basis if they are to serve the metropolitan area adequately. If they do not serve the metropolitan area as a whole, they are not likely to be capable of serving even one portion of the area in an adequate fashion.

Some additional relief from congestion, particularly in the central business district, can yet be obtained by increasing the flexibility of the existing traffic signals. Some of the things which could be done are the addition of additional equipment to provide longer cycles during peak hours, the addition of special pedestrian signals which would cut off the pedestrian right of way early enough to clear the street for vehicular movement, and inter-connection of all signals to provide more effective synchronization and control. All of these things can be done by the addition of more equipment to existing signals but they do represent, nevertheless, a substantial requirement in capital outlay.

Congestion within the central business district during peak traffic hours can also be relieved to a large extent by the elimination of curb parking. Restriction of curb parking in business districts during rush hours has proven to be an effective method of relieving congestion in many large cities, and will ultimately have to be adopted in Sacramento. During the Christmas shopping season of 1951 when congestion appeared to be quite serious, the curb parking restriction was recommended but failed of adoption. It has already proved its usefulness, however, in some of the outlying districts of the city where it has been in use for the past year and a half.

The adequacy of Sacramento's street lighting has not been materially improved during the past year. It is hoped that a comprehensive plan to provide modern street lighting on major traffic arterials will be presented for consideration this year.

Organization and Functions

The organization of the traffic engineering division as shown in Figure 1 has not changed materially since a year ago, with the exception of one additional operation. The City Council added to the duties of the traffic engineer the duties of parking director. These include management and operation of public off-street parking facilities and direction of engineering studies for off-street and on-street parking requirements, plans and facilities. In connection with the acquisition of two off-street parking lots, there has been added a staff section for their operation to include a parking lot foreman and seven parking lot attendants.

1951 Activities Compared with 1950

Activities of the traffic engineering division during 1950 and 1951 are indicated and compared by the following table:

	1951	1950	Percent Increase 1951
Motor Vehicle Registration (County)	139,813	128,259	9%
Traffic Accidents	5,012	5,257	
Personal Injury Accidents	1,095	974	12%
Traffic Signals (Intersections)	105	100	5%
Stop Signs	1,565	1,435	9%
Other Traffic Control Signs	2,624	2,451	3%
Parking Signs	1,058	1,036	2%
Parking Meters	2,450	2,421	1%
Striping (Miles)	139.87	126.80	10%
Cross Walks	1,181	1,092	8%
Miles of Arterials	74.84	72.60	3%
Miles of One-Way Streets	18.73	17.50	7%

Traffic trends in the Sacramento area from 1927 through 1951 are shown in Figure 2 with the increase expressed as an index in terms of 100 in 1927.

ACTIVITIES OF 1951

Current Traffic Improvement Planning

Off-Street Parking

The plan for providing municipally-owned off-street parking facilities which was initiated in 1948 was partially effected during 1951. The traffic engineer was active in assisting the financial and legal consultants in the necessary details in connection with the sale of Off-Street Parking Revenue Bonds in the amount of $1,600,000. After the sale of the bonds, a considerable amount of time was required in overseeing the details of property acquisition, site clearing and preparation of the sites both for temporary and permanent parking facilities.

One-Way Streets

A study was completed early in 1951 analyzing the need for and recommending the establishment of two additional pairs of one-way streets and the extension of two existing pairs. The recommendations were adopted by the City Council in September.

Traffic Signals

Plans and specifications were completed and a contract awarded for the installation of traffic signals at two intersections. Actual installation of these signals will be completed in 1952. Plans and specifications were prepared for the installation of signals at seven other locations. It is expected that a contract for these installations will be awarded in 1952.

H Street Subway

A traffic control system was planned in detail for the projected third lane of the H Street subway.

J Street Subway Approaches

The staff of the traffic engineer cooperated with the staff of the city engineer in planning adequate approaches for the proposed J Street subway.

Access to Off-Street Parking Lots

A study of the problems involved where vehicles enter and leave parking lots which serve retail establishments was undertaken with the assistance of the planning director and his staff. Although access to such facilities has been effectively regulated by the provisions of an ordinance in effect since April 1948, it was found that more than 40 facilities in existence prior to that date are not adequately controlled.

Intersection Treatment

Channelization projects were designed for three intersections. Although two of these have been constructed, one has not yet been submitted to the California Division of Highways for approval prior to construction.

School Traffic Problems

A number of minor studies designed to solve specific problems in the vicinity of schools were undertaken and completed in cooperation with the staff of the Unified School District and the interested PTA organizations.

Administrative Routine

Applications

Requests for taxi stands, parking meter hoods, 10-minute parking zones, passenger loading zones, loading zones, extensions of restricted parking areas and parking meter installations, driveway construction and bus stops were received and reviewed by the traffic engineer. A total of 849 applications were reviewed during 1951.

Traffic Volume Counts

During the fall of 1951, traffic counts were completed in about 35 established locations where such counts are made each year. In addition, traffic volume counts, speed surveys as well as other studies of special conditions were made at various locations.

Accident Records

An analysis of accident records was made for all intersections on the traffic signal priority list, and for all intersections with ten or more reported accidents during the previous year. Whenever requests for stop sign installations were received, accident analyses were made of the intersections concerned.

Operations

H Street Subway Controls

In connection with the widening of the H Street subway to three lanes, a directional control system was constructed for the center lane. The three lanes were separated by lines of traffic bars, and approach controls established at each end of the center lane. Inbound traffic utilizes two lanes through the subway from 6:45 P.M. to 4:45 P.M. each week day and for the full 24 hours on Saturdays, Sundays and holidays. During the 2-hour period from 4:45 to 6:45 P.M. each week day, the center lane is allocated to outbound traffic by shifting the approach lane controls at each end of the subway. Changing of the controls requires about 15 minutes per change and is accomplished by a member of the traffic engineer's field crew. The use of a uniformed traffic officer at two intersections has been eliminated by the installation of these controls.

Sign Shop

A new traffic sign shop was completed and occupied in March, replacing the sign shop which was destroyed by fire nine months previously. The new shop includes complete facilities for the refinishing and manufacture of enameled and reflectorized traffic signs. Refinishing much of the sign stock which was damaged by fire was begun late in the fall after inclement weather had forced suspension of most outdoor work. A program of replacement for some 200 badly weathered stop signs was undertaken at about the same time and these signs will be refinished during the winter of 1951-52. In addition to the manufacturing and repair facilities, the new shop provides adequate and efficient storage space for a complete stock of traffic control signs and street name signs. The traffic control sign stock has been brought up to required levels but it has not been possible to stock an adequate supply of street name signs.

Street Name Signs

Early in the year a new design for street name signs was adopted and about 1,800 sign plates were purchased. The new design calls for 4-inch black letters on a 6-inch white plate using the standard Bureau of Public Roads alphabet for letter design. A special mounting utilizing stock items and salvaged material has been designed and used for installing street name signs of the new design. Signs of the new design have been installed in most of the newly developed residential tracts, and have replaced the old street name signs on three arterials through the city.

Sign Installations

A total of 567 new traffic signs were installed during the year and 198 intersections were equipped with new street name signs. A total of 445 traffic control and parking restriction signs were replaced during the year and street name signs at 78 intersections were replaced. This represents an unusually low replacement percentage as compared to the national average of more than 20 percent, and it is accounted for by the use of a longer lived sign requiring a somewhat larger capital outlay. The higher cost is more than off-set by the lower maintenance cost.

Street Painting

All traffic lane stripes, cross walks, curb painting, and street legends were repainted at least once during the year. Cross walks in the downtown area and on the more heavily travelled arterials were renewed twice as indicated by the fact that some 1,577 cross walks were painted although there are actually only 1,181 cross walks in existence. In connection with the cross walks which are maintained in the vicinity of schools, a program of providing approach visibility was instituted during the annual repainting in August and September. All such cross walks now have a minimum of 14 feet of red curbing extending towards approaching traffic.

Channelization

Two intersections were channelized during the year, and the existing channelization at one location was improved by the addition of a second left turn lane.

Pedestrian Barriers

The first pedestrian barriers in the city were installed at two intersections where heavy left turn movements create unusual pedestrian hazards in one of the four crosswalks. The pedestrian barriers consist of two pipe standards with a chain between blocking the crosswalk at the curb, and a sign advising the pedestrians to use the crosswalk on the opposite side of the street.

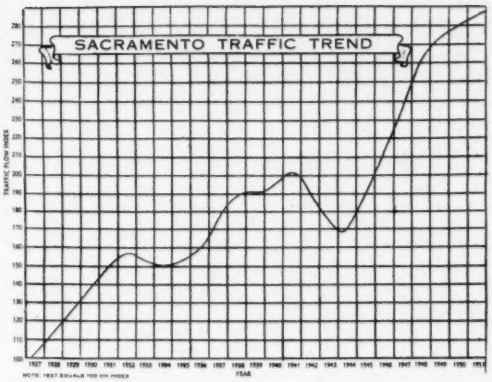

Fig. 2
Traffic Trends in Sacramento.

Traffic Signals

Five intersections were equipped with traffic signals during the year, and a synchronizing circuit was installed. In addition to these new installations, two existing traffic signals were removed and replaced at other intersections. Total cost of the work at the seven locations amounted to $25,522.

In addition a conduit for a future synchronization circuit was installed. The Sacramento Municipal Utility District constructed a power conduit on 21st Street from B to R Streets and as a result of negotiations with the District, the signal synchronization facility was made a portion of the power conduit project. The cost of this facility to the city was slightly less than $2,000, and constituted a net saving of more than $7,000 if the conduit had been constructed separately. The existing traffic actuated signal at another intersection was modified by the addition of left turn signals and relocating traffic signal heads for better visibility. Signal improvements and additional channelization were constructed by the city forces and financed jointly by the city and the State Division of Highways.

Traffic Ordinance

On March 8, the City Council adopted a comprehensive traffic ordinance which constituted a complete revision of the city's traffic laws and the first such revision since 1922. Ordinance 1570 follows the Model Traffic Ordinance for cities prescribed by the League of California Cities which in turn follows the Model Traffic Ordinance recommended by the President's Highway Safety Conference. Revision of the city's ordinance to conform with the model ordinance, was begun several years earlier and has been the subject of much study and review by the city attorney, the chief of police, and the chief of traffic, as well as by the traffic engineer.

View Obstructions

The new traffic ordinance provides for the elimination of view obstructions such as shrubbery, signs and fences that are so close to an intersection as to constitute a traffic hazard. Immediately following the adoption of the ordinance, the traffic engineer's staff made a survey of the city and compiled a list of more than 250 view obstructions which could

be reduced or eliminated under the provisions of the ordinance. Each property owner involved received a letter which quoted the ordinance and asked his cooperation in clearing the view obstruction. The assistance of the traffic engineer's staff and the park superintendent's staff was made available to any property owner wishing further advice. The response of the property owners was most gratifying and about 99 per cent of all obstructions were cleared. By the end of the year, only one or two cases had not been completely cleared to the satisfaction of the traffic engineer, and in no case has it been necessary to resort to the legal action provided in the terms of the ordinance.

Parking Meters

At the end of 1951, there were in operation 123 twenty-four-minute meters, 1,085 one-hour meters, and 1,242 two-hour meters, representing a net increase of 49 meters over the year before. The total income of $216,135 represented a decrease of $607 from 1950. However, the average income per meter declined to $89.38 as compared to $90.46 in 1950. Some of the decrease can perhaps be attributed to the fact that about 70 to 80 meters were removed from effective operation during more than four months of the year in order to provide members of the Street Legislature with parking spaces in the vicinity of the State Capitol. This special concession was made as a temporary measure pending completion of the Capitol Annex which is expected to house the legislators' automobiles during future sessions. It should be borne in mind that the cost of maintaining the meters is continually increasing inasmuch as nearly all of the parking meters are now past the first half of their expected service period. A large number of meters suffered damage as a result of intentional misuse by persons operating the meters. The parking meter foreman has designed a reinforced ratchet plate which is being installed in areas where the vandalism has been noticeable.

Parking Lots

The first city-operated parking lot was placed in operation on August 8, 1951, at Sixth Street and Capitol Avenue. This marked a major milestone in a program which had been initiated early in 1948. A vast amount of ground work has been required to bring the program to completion and most of this was completed by June 28, 1951, when the City Council adopted Resolution No. 361, authorizing the issuance of Off-Street Parking Revenue Bonds in the amount of $1,600,000. The bonds were sold on July 24 to a combine consisting of Blyth and Company, Moulton and Company, and William R. Staats and Company at a net interest bid of 3.192 per cent. Sale of the bonds was completed in time to reimburse property owners on August 1 (informal options having been previously secured for all parcels of property) and the city was able to take possession of most of the property on September 1. Since that time, two sites have been cleared of all existing buildings and construction of the permanent parking facilities begun. Four contracts for demolition or removal of the buildings were awarded in September and October, and the clearing of the sites was completed by December 1, 1951. It is expected that the permanent facilities will be completed early in 1952. In the meantime such portions of the two sites as have been available from time to time have been used for the parking of cars. The Civil Service Commission established the positions of parking lot foreman and parking lot attendant, held examinations and filled the positions of one foreman and seven attendants. Temporary parking facilities were constructed by the city crews and have been maintained and readjusted as necessary by the same personnel. Nearly 80,000 automobiles were parked on the two lots between August 8 and December 31, 1951. A summary of the operation appears in the following table:

	Block 6-7, L-Capitol	Block 10-11, H-I
Cars Parked	45,207	34,189
Parking Revenue Received	$10,660	$ 9,376
Days of Operation	122	99
Average Cars Parked Per Day	371	345

Planning For Future Projects

Arterial Treatment

The first of a projected series of detailed engineering studies was started in mid-year and had not been quite completed by the end of 1951. This study encompasses the entire length of an important boulevard and in cooperation with the California Division of Highways extends outside of the city limits. The study includes detailed analysis of accidents over a 4-year period, present traffic volumes and flow patterns, pedestrian volumes, and vehicular speeds. It is expected that the report will lead to a recommendation for overall treatment of the boulevard for improving traffic flow efficiency and reducing accidents. This represents a somewhat different approach to the problem of traffic congestion than has been used in Sacramento heretofore. Upon completion of the present study, it is planned to undertake similar studies on a number of other arterials.

Traffic Signal Priorities

A uniform system for studying the needs of individual intersections so far as traffic signals are concerned was adopted by the traffic engineer during 1951. Known as the modified Detroit method, the system provides a uniform comparison of all traffic congestion factors at any given intersection. Upon completing the analysis for each of a number of intersections, a priority rating was established showing the relative need for traffic signals at each intersection. Approximately 50 intersections were set up for the first series of studies and about 40 of these have been completed.

65th Street Extension

The staff of the Planning Commission has been in the process of developing a plan for the extension of 65th Street as a north-south arterial route across the east end of the city. The traffic engineer has participated in conferences with the planning director and his staff in developing a 65th Street plan.

Street Lighting

Study of the modernization of street lighting has continued with the cooperation of the Sacramento Municipal Utility District and the city electrician. It is hoped that the report of this joint committee will be completed and available for presentation during 1952.

Staggering of Hours

It has been felt that a great deal of traffic congestion could be alleviated by a staggering of hours by the major employers within and without the city. A considerable volume of basic information to lead toward a recommendation has been accumulated during the past year.

Traffic Problems in Small Cities*

By Wilbur S. Smith (Mem., ITE)

Associate Director, Bureau of Highway Traffic, Yale University

THE THESIS cannot be sustained that because a city is small its traffic problems are less important than those facing larger cities. It is true that the degree and magnitude varies greatly but, relatively, traffic matters are just as serious and justify attention just as much in small as in large cities. The situation might be likened to that of illness. A child can become as sick, if not sicker, from a particular disease as an adult. Unless treated with the same vigor and alertness the child might never become an adult, or upon becoming an adult, incurable deficiencies might be present. In the beginning then, let it be assumed that traffic problems of small cities are serious and demand the attention of both public officials and traffic specialists.

Traffic problems are everywhere apparent. There is no escape in the small city. The growth of these problems has been phenomenal. Annual increases in travel of 8% to 12% are occurring regularly with volumes doubling in the last decade. In some instances the growth of traffic on urban streets has been even greater, with annual increases as high as 21% reported. In spite of these large increases, the saturation point is not yet apparent.

Many top public administrators now place traffic second only to finance in their listing of municipal problems. They realize that a point has been reached where traffic should control many municipal plans rather than attempting to have the plans control traffic. This is actually nothing more than a realization of the demands of citizens for convenient and efficient automotive transportation. Of especial interest to city authorities is the fact that about one-half the travel which takes place in automobiles in this country is on city streets.

Peculiar Problems of Small Cities

The automobile has had a profound influence on cities, both large and small. In general it has brought about a rapid growth in populations of large cities and decay in many of the smaller cities. Today, however, this same type transportation threatens to bring a reversal in the population trends of larger cities. Officials of these cities are fearful that they may quickly lose much of the gain they have made in the past 25 years, especially in business. Some of the losses of the large urban areas will inevitably become gains of the small cities.

From the time a community is initiated, problems of movement and traffic develop. The presence of structures and persons along a public way create frictions to movement. When intersections are created through the normal processes of community growth, the friction becomes more severe and acute traffic problems begin to make themselves apparent. The small community no more escapes these than the large community, and percentage-wise they may be even worse in smaller places. From such early beginnings, the transportation problems quickly grow so as to include the conventional matters of accidents, congestion and parking.

The small city may have some traffic conditions which are peculiar to it. It might have a through highway route problem. They might have a main street problem, or they may have an unusual congestion problem created by a preponderance of commercial vehicles. All of these, of course, can be found in the large cities, but they may not be as concentrated, immediately apparent, and relatively as acute.

Congestion and accidents are, after all, relative matters. An accident rate, or congestion level which might not appear serious in a large city might seem very severe in a small place. Everyone knows, for example, that motorists in a small town become quite irritated when they are required to reduce speeds to from 15 to 20 miles an hour, while in large cities such speeds are not considered too severe, and irritations may not develop until speeds of less than 10 miles per hour occur. The same relative attitude prevails with regard to accidents. Kill a person in a small city in traffic and everyone knows about it, and will likely evidence criticisms and find faults. In a large city the same death might produce a negligible reaction insofar as actions of public officials are concerned.

The traffic problems of small cities are very apt to be close to the public, much closer than in large cities. As a result, problems in the small cities are more likely to be clouded by lay opinions and by political influences. These interferences and views become especially pronounced when they result in "technical" treatments that produce controls which are over-restrictive in character.

The attitude may be found in small cities that, because they are small, the traffic problems are simple and can, therefore, be handled without expense and without technical assistance.

In small cities the poorest mass transportation services are found. Many of these cities are completely without transit services. They, therefore, become entirely dependent upon private automobiles and a much higher vehicle ownership rate exists.

It can be unfortunate in many small cities if incorrect views prevail relative to traffic improvements. This may be especially true with regard to such important matters as the effect of one-way streets and by-passes on businesses. One-way streets are often opposed, without trial, under the mistaken idea that they will hurt some businesses. It is still common to find the construction of by-passes opposed by business groups and officials of small towns on the basis that such by-passes will deny the town much of its business potentials. Recent studies which have been made in California and other states show that by-passes are often favorable to local businesses rather than negative. Such results prove the need for objective approaches to traffic problems, particularly where major controversies are apt to develop. Results of

*Presented at Kansas Highway Engineering Conference, Manhattan, Kansas, March 21, 1952.

changes can be accurately measured. If the small towns are not willing to allow control of access to highways, if they invoke unreasonably low speed limits, if they clutter the streets with unneeded traffic signals, if they refuse to control curb and double parking so as to expedite movement, if pedestrian crossings are not regulated and if other commissions and omissions negatively affect traffic movement, both as to efficiency of flow and safety, it must be expected that corrections will soon be sought by state authorities. They have no choice. It seems somewhat ironical that the very groups and agencies responsible for the troubles on through routes in small towns are usually the ones who cry loudest when the state releases plans for new routes or bypasses aimed at correcting the traffic muddle.

Small Cities Need an Adequate and Balanced Program

Small cities need a comprehensive, balanced, and coordinated traffic program just as much as the large cities. They need to consider all of the conventional approaches to traffic problems, including engineering, education, enforcement, legislation and adjudication. When traffic problems first became apparent they were inevitably handed to the police. The police have done an outstanding job, but as the problem grew rapidly to such huge proportions, it became apparent that the police could not be expected to cope with it alone. They need help in coping with many of the complexities of urban traffic. This realization has come about more steadily in the small cities than in large ones. It is just recently that the small cities have realized that they not only need, but that they can afford technical engineering services.

Since the early '20's, traffic engineering has proved itself an invaluable tool for work with municipal traffic problems. It is needed in all cities and there are logical ways in which it can be provided. Again, variance is only in degree. The growth of traffic engineering has been somewhat phenomenal. More than 60% of the cities of 50,000 or more population, and about 40 of the states now have formalized traffic engineering bureaus. Traffic engineering activities have long existed in the Kansas Highway Department. Many valuable contributions have been made by traffic engineers of the state. Some of the cities in Kansas have recognized the values. Wichita has a particularly strong department of traffic engineering.

While traffic engineering may not as yet have become an exact science, it is certainly an engineering specialty that is growing rapidly and is being widely applied. It is doubtful that the public and some public officials realize how much has been learned and is now known in traffic engineering. Actually there is a huge reservoir of knowledge available to experienced and trained traffic engineers which is valuable to all cities. It is one of the elements of a well balanced municipal program that should now be considered a "must." In the final analysis, each city must aim for a SYSTEM of traffic. Sporadic and un-coordinated treatments are not lasting or good.

Again it is emphasized that the objective of all cities should be a *balanced* program. Just because this discussion is limited largely to traffic engineering, no inferences are intended that would point to traffic engineering as the primary or principal component in the overall program.

Values of Technical Traffic Program

There are many ways in which a good technical approach to municipal traffic problems can bring marked advantages to the community.

Planned stage developments save money. It is not uncommon, for example, to find that a study of traffic signals reveals that equipment already in use was purchased with little regard for the future, nor for ultimate coordination into a signal system. As a result, it will likely be necessary to discard all of the existing equipment in order to modernize the city's signal system. Such inefficiencies are unnecessarily expensive.

The correction of problems while they are still small and before they grow large and prohibitively expensive is another gain which can be expected when proper technical assistance is provided. In this the small cities obviously have marked opportunities which cannot exist in the large cities.

A sound technical approach to traffic difficulties, in which many opinions can be replaced with facts, should be the rule. It is now realized by traffic professionals that the problem will never be solved by trying to blame all faults on drivers. It is illogical to approach solutions on the basis that major changes can be effected in public actions and desires.

Improper uses of urban highway revenues can be a major deterrent to progressive traffic treatments. Parking meters might be completely over-used, just because they produce revenue. They should be used only in accord with traffic and parking requirements.

The question is often raised as to what effect traffic improvements have upon the community. It is good when people become concerned with highway improvements and proper uses of funds. In these matters and in many other problems of traffic, the facts revealed by objective surveys are often contradictory to prevailing opinions. Answers are often derived which might not be apparent from a surface analysis alone. Municipal traffic affairs have reached a point where they are as much in need of technical assistance as some other well founded and established public activities.

A technical program can pay its way in direct savings to the community. Add to these savings the intangible losses in accident and congestion which may be prevented, and it is usually found that the program much more than pays its way.

Like large cities, the small ones must develop several approaches to their traffic problems. They must aim to make the best use of existing streets. They must develop adequate plans and pursue the construction of needed new routes. They must accept parking as an essential to the maintenance of health and vigor of the central business district, and must see that it is provided in a convenient and attractive form. Traffic codes must be kept modern and adequate. Finally, they must see that the best possible utilization is made of the available funds for highway and traffic purposes, otherwise needs can never be met.

Procuring Technical Services

There are a number of ways in which traffic engineering services may be made available to small towns.

They may hire a full time traffic engineer. By such action, it might be necessary to procure the services of younger and less experienced men and to accept in advance the inevitable loss of the men, as they become experienced, to larger cities and to others who can offer them greater salaries and opportunities than can be offered by small communities.

Cities can use traffic engineering services which are provided by highway departments. Many state highway departments have today developed special urban divisions

within their traffic engineering bureaus so that they are in a position to provide the most valuable services to cities. It is very important in this connection that the states add to their staffs persons who have had experience in urban traffic engineering. Care must be exercised to keep cities from getting the feeling that studies and recommendations made by state personnel are too biased in favor of through traffic problems. Unfortunately, this situation is found frequently.

Where cities do not feel that they can afford a full-time traffic engineer, they might consider the employment of traffic engineering consultants on a sustained basis. A number of cities are today employing consultants to spend a specified number of days per month working within the city. This has some advantages. The amount of time obtained can be fitted to the resources and budgets of the particular community; the consultant can bring rich experiences from work in other cities and fit them to similar problems within the city employing him; and, the recommendations of "outsiders" may be looked upon as more "expert" than would those of full-time employees.

In some cases small cities have found it advantageous to join with other small cities which are conveniently located geographically in sharing the services of a traffic engineer. Together they can raise a sufficient budget to attract a qualified person. Expenses may be pro rated in accord with the amount of time the traffic engineer gives to each of the communities.

Limited traffic engineering assistance is available to some municipalities through local and national highway organizations and associations. These include various insurance groups, safety councils, automobile clubs, trade associations, and others. Inasmuch as these groups do not offer continuing or complete services, it is generally considered that assistance they render is more of the pilot or exploratory type and should, thereby, not be considered as filling the needs for sustained or full-time traffic engineering activities.

Some cities have succeeded in combining traffic engineering with other engineering functions. In most instances this approach has failed because the individual is likely to be so burdened with details of the other job that he cannot give traffic necessary attention.

Where it is not possible to employ traffic engineers, or to procure services through any of the above, city officials have arranged for the up grading of local engineers. They can assist them in getting formal traffic engineering training and can otherwise aid them in taking over traffic engineering responsibilities. For this approach there are many precedents. *One does not become a traffic engineer by simply assuming the title!*

In all considerations of traffic engineering services, it should be kept in mind that titles, after all, are not important. Only the functions really count. It is generally recognized that many fine jobs of traffic engineering are today being performed in municipalities by persons having other titles. The importance of the *functions*, however, cannot be minimized.

Conclusions

To conclude and summarize, the following points are offered:

The traffic problems of small cities are no different from those of large cities, except as to degree.

Traffic achievements are definitely limited when they depend principally on general civic and lay activities.

Factual and objective approaches, such as are best afforded through traffic engineering, provide the most sensible solutions to traffic difficulties. No matter what the size of the city, technical services should be provided. Quantities may vary, but the same high quality of technical service is needed.

Current problems and future forecasts are of such magnitude that it is no longer a question of not being able to afford technical assistance, but rather a question of being able not to afford such assistance.

The ultimate objectives of any traffic program will depend in the final analysis on the support given by top administrative and key official groups. The best technicians and the best programs are doomed to failure unless they receive adequate support of the proper persons and groups.

Major accomplishments in traffic must always bear a close relationship to matters of economy. Improvements must be economically justified. There must be developed a willingness to pay, and the funds must be wisely invested.

Traffic improvements are not easy. Even technicians cannot provide tricks or panaceas. The tempo of modern traffic is fast; changes are taking place rapidly; demands of the public are often not what one would expect; and, there is much competition for top position. It is apparent that the average person may become irritated by some of the shock treatments which have been proposed to meet traffic difficulties. Diagnosis of traffic problems is not sufficient. Needed treatments must be carried through by obtaining public and official support.

It is particularly important that small cities adopt needed traffic policies. They should proceed on the basis that nothing is more important to sound city growth than good transportation!

Britain to Spend £1 Million On Road Improvements

The British government has announced that £1,000,000 (U. S. $2,800,000) yearly will be spent to remove road accident hazards.

Commenting on this announcement, the Secretary of the British Road Federation said: "This is a welcome—if belated—recognition of the contribution which road improvements can make to the prevention of death and injury.

"For 20 years the British Road Federation has campaigned for roads made safer by engineering and as recently as January urged that a bare minimum of £5,000,000 a year should be allocated expressly for this purpose.

"While the £1,000,000 a year is very acceptable, anything less than £5,000,000 a year can only be regarded as a token. Motor taxation totals £250,000,000 a year and road transport accounts for three-quarters of all expenditures on transport in this country."

PLEASE MENTION
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A New Highway Luminaire for Intersection Lighting

By F. M. Carter (Mem., ITE)

Assistant Traffic Engineer, California Division of Highways

Photo Calif. Highway and Public Works

Day View of Fluorescent Luminaire.

Photo Calif. Highway and Public Works

Night View of Fluorescent Luminaire.

A DISTINCTION between rural lighting and urban lighting is being recognized and this distinction also includes a difference between continuous lighting and intersection lighting. Rural intersection lighting has always been a problem to illuminating engineers because the ordinary street lighting luminaires, which are not objectionable in cities where there are an abundance of other lights, become an annoying glare source against the black sky background at rural intersections on our high speed highways. The present-day street lighting luminaires with vertical burning lamps produce a definite glare to the vehicle driver. The horizontal burning mercury vapor lamps and a new type luminaire permit a reduction of this glare by the addition of glare shields on the outside of the luminaire.

For many years it has been thought that fluorescent lamps should be used, but the ordinary fluorescent lamps had several disadvantages which made their use impractical for street or highway lighting. In recent years, however, there has been considerable activity in the development of fluorescent lamps.

One recent development has been the introduction of the slimline types of fluorescent lamps which are now available in a variety of sizes and colors. These lamps are instant starting (require no starter as do ordinary fluorescent lamps), and have a high light output as well as an extremely long life. The California Division of Highways has been using these lamps to illuminate overhead signs on the freeways for a year or more, and the results have been very satisfactory.

One of the latest lamps announced is 1½ inches in diameter, eight feet long, and can produce a light output of 5,800 lumens at an operating current of 600 milliamperes. Four of these lamps when placed in one luminaire would produce a total of 23,200 lumen, or slightly more than the amount produced by one 20,000 lumen mercury vapor lamp as used in present-day luminaires.

The ordinary street lighting luminaire is designed for continuous lighting of the street and consequently directs the light equally in both directions. When it is mounted on the far right corner of the intersection the light which is directed into the intersection appears as a bright pattern on

(Continued on page 298)

Newark's Newest Indoor Parking Garage

By Edward L. Cyr (Mem., ITE)

Traffic Engineer, Department of Public Safety, Newark, New Jersey

Photo by George Vax, Newark

Fig. 1
External View of Garage.

On December 1, 1952, Newark's modern parking garage was opened under the direction of a nationally known Parking System.

This garage adjoins the new Commerce Court office building at the corners of Raymond Boulevard, Commerce Court and Commerce Street in the financial and commercial center of the City. The garage runs from Raymond Boulevard through to Commerce Street with entrances on both streets and extends some 400 feet to Mulberry Street. The garage and the office building comprise an entire square block. The basement, the second floor and the roof are used for parking, with the first floor used for entrance, gasoline pumps, office and waiting room, and the remainder of the first floor for retail stores. The square block referred to was originally owned by the City of Newark and had been leased as a parking lot. As such, its capacity was 250 automobiles. The new garage can accommodate 750 automobiles.

Design of Garage

Not only was the garage itself designed in keeping with the most modern concepts of architecture and construction, but it was also designed in such a manner as to provide the most efficient and functionally perfect parking garage possible. In designing the garage, the operators consulted with the architect, Mr. Henry S. Boyer, and enlisted the assistance of the City of Newark. Commissioner John B. Keenan, Director of Public Safety, and the author devoted countless hours of their time conferring with the architect, the draftsmen and the garage officials in an endeavor to attain a garage which would be as functionally perfect as circumstances would permit.

The grades of all ramps leading from the main floor to the second floor and to the roof and also to the basement are all 15%. The overhead clearance from the main floor to the second floor is 14.36 feet, from the second floor to the roof 11.59 feet and from the basement to the first floor 11.50 feet.

Design of Entrance

The garage was constructed with an unobstructed entrance on Raymond Boulevard of 75 feet. Raymond Boulevard, one of only two east-west arteries in the Central Business Area, is a two-way main thorofare which bears heavy east bound traffic in the mornings and by the use of this wide approach the garage can take off the street 27 automobiles at one time. This width of entrance permits nine automobiles to cross the sidewalk simultaneously side by side, and the depth of the garage allows for three automobiles in each of the nine rows before they are taken to their regular parking stalls. In addition, there is an entrance on Commerce Street 30 feet in width. Commerce Street is a one-way street west bound and naturally does not bear the heavy morning traffic that is carried by Raymond Boulevard. Nevertheless, the Commerce Street entrance can accommodate six automobiles simultaneously.

When a customer drives into the garage, he is immediately met by a courteous, uniformed attendant. The attendant quickly dispatches the automobile to a stall bearing a number corresponding to that on the claim check. In this way, there is never any delay in looking for an automobile when the customer returns. In the garage office there is a master board which indicates the location of every available space in the garage at any time. After the attendant has parked the automobile, he returns to street level by a high-speed, modern passenger elevator installed for the express use of the attendants in order to facilitate operations.

When the customer calls for his automobile, he presents his claim check to the cashier who calls out its location over a public address system. An attendant immediately brings the automobile to the customer at street level without delay. The staff of 18 men, in addition to the cashiers, makes it possible for a customer to drive out of the garage, even during the rush hours, within 3½ minutes after presenting his claim check to the cashier.

Effect on Streets and Properties

Garage traffic is routed through Raymond Boulevard and Commerce Street so as to impede the normal flow of

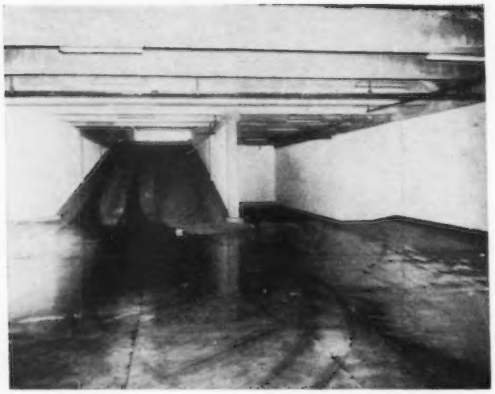


Photo by George Van, Newark

Fig. 2
Ramps Viewed From Reservoir Space on First Floor.

traffic as little as is practicable. For this purpose the police officers on duty in this area cooperate with the garage personnel and through their mutual effort, traffic control is maintained.

Prior to the erection of this garage, downtown Newark was beginning to suffer from the decentralization to shopping centers that has been the bane of so many other municipalities. Because of the difficulty in finding convenient parking space, shoppers were going to outlying areas and suburbs. With the opening of the new garage with its efficient service and modern facilities, shoppers have been encouraged to return to the downtown Newark area.

Thus, the importance of parking to the economic well-being of the central business district of the City of Newark cannot be over-emphasized. With changes in transportation habits, the spread of population and the building of alternative and suburban business centers, an increase in parking facilities in central Newark has become an economic necessity. The prosperity of business in Newark depends upon trade from the suburbs as well as from within the City limits. Without adequate parking facilities close to the business district, obviously customers will take their business to more accessible locations. Eventually, this would lead to a decline in values and a loss of tax revenue to the City of Newark. Thus, the construction of this modern garage not only benefits the large investments in downtown Newark, but is good for the community as a whole.

In a recent report of the Regional Plan Association it was pointed out that the danger to Newark was very real. It was found that branch stores outside of established centers in the New York metropolitan area have more than doubled in number during the last five years. In the last two decades Newark retail sales, in terms of 1939 dollars, increased less than 14%, while retail sales of the northern New Jersey suburban area increased more than 54%. The popularity of the suburban shopping center is attributable to traffic congestion in the old established business centers and also to a conscious effort to provide well-designed stores with generous parking facilities in the new suburban centers. Millions of dollars have been invested in off-street parking facilities in the suburbs. Central cities, such as Newark, must of necessity meet this competition. By the erection of the garage, a concrete forward step was made.

Location Factors

In conjunction with the Department of Public Safety and the Traffic Engineer, it was determined that the most acute parking problem in the City of Newark exists in the retail shopper and commercial area. This is the area where the primary need is to serve the parking requirements of business establishments and their customers. It is essential that the locations, capacities and design of the facilities in this area be geared to high turnover parking. Most of the short-time demand generated in this area must be met in the immediate vicinity because the customer will not walk more than a few hundred feet from his automobile to the shop or place of business which he is visiting. While the businessman may walk a greater distance, if necessary, to his place of business, he, too must have convenient parking. Thus, the new garage proved to be the only available location in the City of Newark which would meet the existing demand. The garage is adjacent to the newly constructed 12-story office building. It is directly across the street from the Federal Trust building, the National Newark and Essex building and the Raymond Commerce building—the three larger office buildings in the City. It is also diagonally across the street from the Public Service terminal and offices. In the immediate vicinity are many retail stores, restaurants and banks. It is but a short distance from several large department stores and the downtown theaters. In short, the garage is in the very hub of Newark. Therefore, due to the capacity of the garage and the speed and efficiency of its operation, the parking problem in this area has virtually been solved.

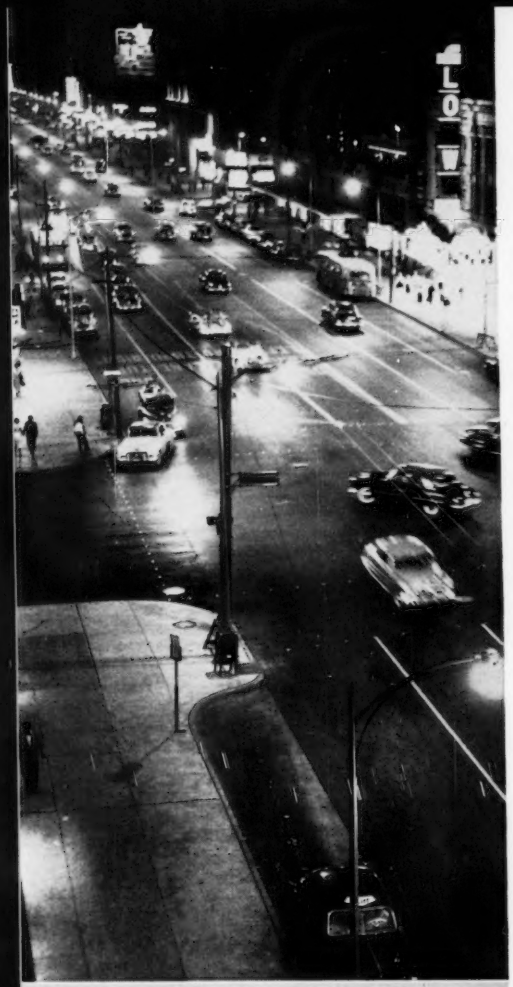
Future Expansion Provided

It is almost impossible to make an accurate prediction of future parking demands. When expanded parking facilities are provided, additional parking demands usually result. Many communities have found that good parking facilities attract additional parkers who in turn create more demand for new parking facilities. The management of the garage was well aware of this vicious cycle prior to the commencement of construction. Accordingly, the garage was built with this in mind. Before the first shovelful of earth was removed, borings were taken and the foundation and footings were laid in such a manner as to permit additional floors to be

(Continued on page 295)

Photo by George Van, Newark

Fig. 3
Parking Arrangement on Second Floor.



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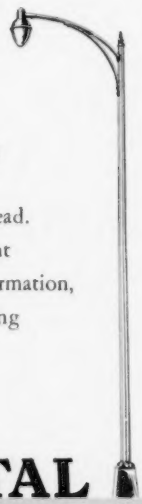

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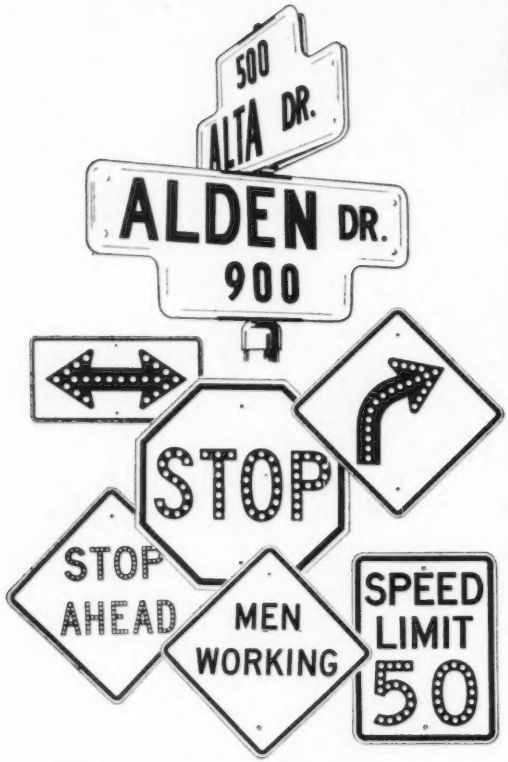

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(Continued from page 292)

added to the garage if necessary. For each additional floor which may be added in the future, there will be accommodations for approximately 250 additional automobiles.

In the new garage a spacious, well-furnished, completely air conditioned, modern waiting room is at the disposal of the customers. There is a parcel checking service available. The garage has all the facilities of a modern, fully equipped service station, including shower rooms and lockers for the parking attendants. Soft drinks, cigarettes and candy vending machines have also been installed for the convenience of the customer.

Parking Rates

All of the services and facilities would, of course, be of no value to the City if the rates charged were prohibitive. Therefore, the management, taking full cognizance of this fact and appreciating its obligation to the public as well as to its stockholders, voluntarily fixed moderate parking rates with special low rates for shoppers and with special monthly rates for the businessman whose office is in the immediate vicinity.

By reason of good design and efficient management, it is possible to maintain moderate parking rates and to furnish the public with courteous and efficient service. This formula leads to success in any enterprise.

Off-Street Parking Space Requirements of Modern Shopping Centers*

In reviewing present practice in providing parking space it is recognized that zoning requirements seldom reflect real parking demands. Almost universally, parking requirements in zoning ordinances are inadequate and often grossly so. This inadequacy probably results from first, a lack of real facts on parking needs, and second, the impracticability of setting zoning requirements at a level that will invite strong public resistance.

Accordingly, it is believed that the current practices that can be used most profitably in guiding the public parking policies will be found not in zoning ordinances but in examples of modern shopping centers as actually built.

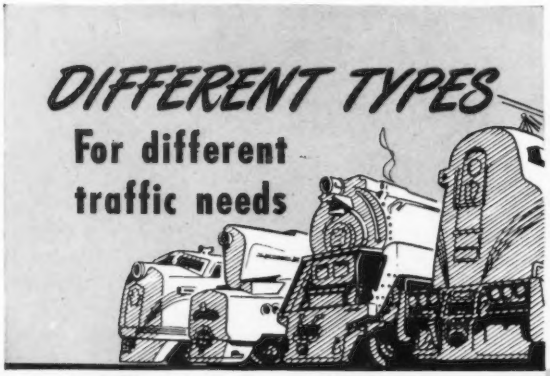
The accompanying table shows parking spaces supplied in connection with several modern shopping centers throughout the country and indicates ratios of parking area to floor area of *three or more* in some places.

*Taken from Report of Public Parking Lot Technical Advisory Committee to the County Council, Montgomery County, Maryland, February 25, 1952.

**Sales area only used in this instance.

OFF-STREET PARKING SPACES
PROVIDED IN VARIOUS MODERN SHOPPING CENTERS

Shopping Center	No. of Spaces	Ratio, Parking Area to Store Floor Area
Town and Country Village Sacramento, Calif.	900	3.7
Prairie Village, Kansas City Missouri	581	3.4
Broadway-Crenshaw, L. A.	2,750	2.9
Parkington, Arlington, Va.	2,000	2.8**
Bellevue Sq., Bellevue Washington	1,000	2.4
Highland Park Village Dallas, Texas	650	2.1
Woodward and Lothrop Montgomery County	900	4.8
Fresh Meadows Neighborhood Centers Flushing, Long Island	175	2.4
Fairway Kansas City, Missouri	400	2.3
Shoppers World Framingham, Massachusetts	6,000	3.8
Village Market La Grange Park, Illinois	——	2.3
Northgate Seattle, Washington	4,000	2.3
Clearview, (Planned) Princeton, New Jersey	1,900	2.8



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Letters To Editor

Editor, "Traffic Engineering" Magazine
Strathcona Hall, New Haven, Connecticut

I wish to call your attention to an erroneous formula in the article "Statistical Evaluation of Origin-Destination Data", by Orman K. Anderson, which appeared in your February issue. One section of the article discusses the way in which statistical theory can be used to estimate the reliability of the zone-to-zone volumes computed after interviewing a sample of the drivers. Mr. Anderson's discussion is illuminating and thoroughly sound in principle, but the formula from which Figures 4 and 5 have been plotted is incorrect.

Using i for the total volume of interchange between a particular pair of zones, f for the sampling fraction, and σ (which your printer chose to call g) for the coefficient of variation of the estimated total number of trips, Mr. Anderson stated that

$$\sigma = \frac{1}{f}\sqrt{\frac{1-f}{i}}$$

The estimates are actually better than this, for the correct formula is

$$\sigma = \sqrt{\frac{1-f}{fi}}$$

To the best of my knowledge this formula has not been published before. I shall be glad to show my derivation to anyone interested.

Since the proof of the pudding is in the eating, it is instructive to compare the two formulas with the empirical results reported to the Highway Research Board by John T. Lynch in 1944. Such a comparison shows that Mr. Lynch's data are consistent with my formula but not with Mr. Anderson's.

Sincerely,

Morton S. Raff
Mathematician
Bureau of Public Roads
Washington, D. C.

Editor, "Traffic Engineering" Magazine
Strathcona Hall, New Haven, Connecticut

The March, 1952, issue of "Traffic Engineering" contains a news item in the "Traffic News Section" which briefly describes the objectives of the "National Parking Association." One of the main objectives of the Association, as stated in the article, is a cooperative program which involves a "three step approach" to the parking problem. The three steps listed are briefly as follows: First, an "available space survey" must give city officials the facts as to "whether the existing facilities are adequate or insufficient to accommodate the demands for parking space;" Second, "Cooperative plans must be developed to assure maximum efficient use of existing off-street parking facilities;" Third, "If the results of these two steps indicate the need for additional off-street facilities, a cooperative program should be adopted to provide these needed facilities."

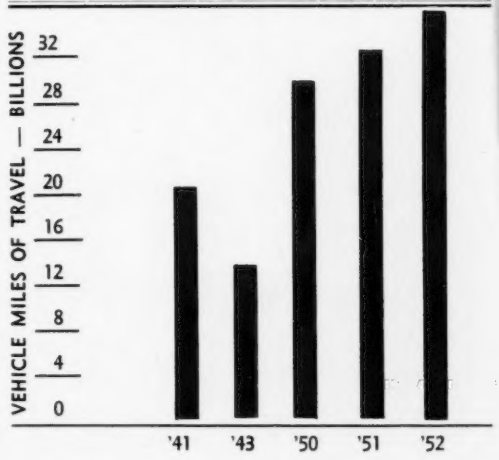
In a recent letter "to operators and owners of parking garages, ramps and lots," the Association made the following statements: "Municipal parking involves the type of Government subsidy with which no private parking operator wishes to compete." "Those who face the prospect of Municipal Parking plans, face a subsidized tax-free competition, at parking rates private industry could not possibly meet." "They also face the prospect of an over-abundance of parking facilities, bringing about chaotic cut-throat conditions."

In a letter from a local representative of the National Parking Association to parking facility operators in Detroit the following statement appeared: "Municipal parking is a cancerous idea which can skyrocket into a gigantic socialistic plan. We are fully aware of how badly we need a powerful organization to combat this ever-spreading, dreaded plague."

In view of the above, we hope that the published objectives of the Association have not been compromised and that the Association will help in the cooperative effort of private parking facility operators and municipal officials in working out a parking program to the interests and welfare of the public.

H. M. Batts Jr.
Sr. Asst. Traffic Engineer
Department of Streets and Traffic
Detroit, Michigan

Traffic Trends



TRAVEL ON RURAL ROADS FOR FIRST TWO MONTHS OF 1941, 1943, 1950, 1951 and 1952.

Based on Bureau of Public Roads Data

(Continued from page 290)

the pavement for the approaching motorist. The light which is directed away from the intersection is reflected away from the approaching motorist and is of little value in building up pavement brightness. This is accentuated when the pavement is wet. It seems reasonable, therefore, that for intersection lighting a luminaire which directs the main portion of its light into the intersection would be more efficient.

Personnel of the Traffic Control Section of the Traffic Department of the California Division of Highways recently designed and had manufactured a lighting unit specifically for highway intersection illumination. The unit as designed is approximately 16 feet long, and the reflector is a paraseil shape with white porcelain enameled facets to reflect the light rays. Four eight-foot fluorescent lamps are used. The unit is supported at right angles to the travelled way and approximately 28 feet above the pavement by a 20-foot, 3-inch horizontal mast arm. This luminaire uses four of the new lamps and is designed to direct the light in one direction only. In accordance with the American Standard Practice, the location for an intersection light is on the far right corner as one approaches the intersection. This produces a bright area on the pavement in the intersection and enables the approaching driver to see objects in the intersection both by direct illumination and by silhouette.

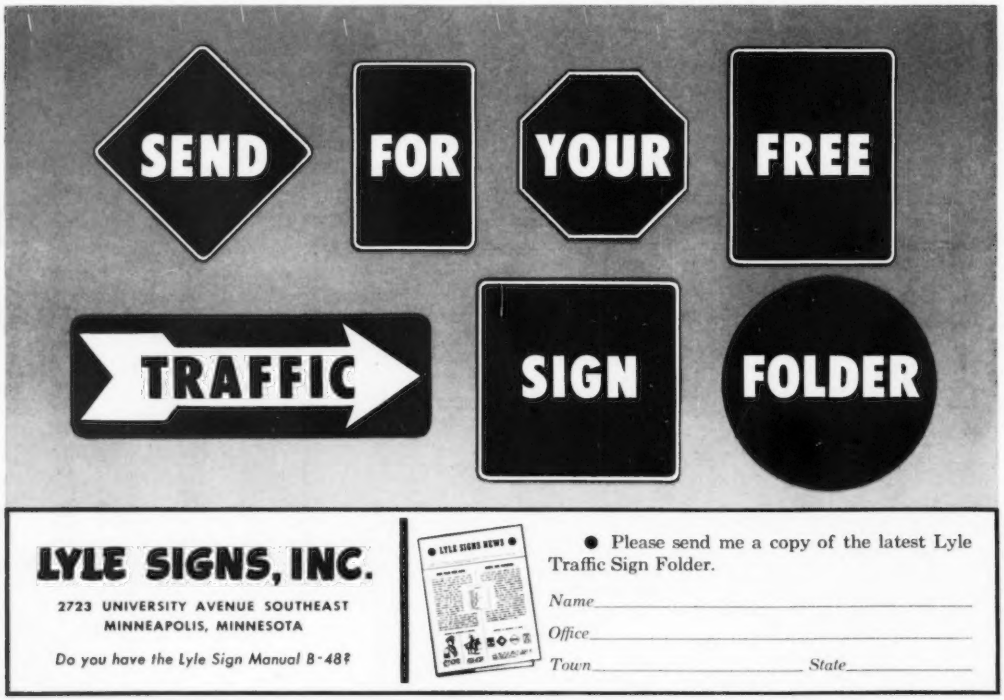
Another major advantage of the 16-foot long fluorescent luminaire is that the wide brightness pattern on the pavement is not affected by a wet pavement surface and there are no excessively bright streaks on the pavement as is so often the case with ordinary street lights on a rainy night.

The accompanying photographs show day and night views of the 16-foot fluorescent luminaire unit installed at an intersection. In the night picture, it should be noted that the long beam produces wide pavement brightness which silhouettes vehicles when the pavement is wet.

MEMBERSHIP INFORMATION

may be obtained by writing to:

Executive Secretary
Institute of Traffic Engineers
Strathcona Hall
New Haven 11, Connecticut



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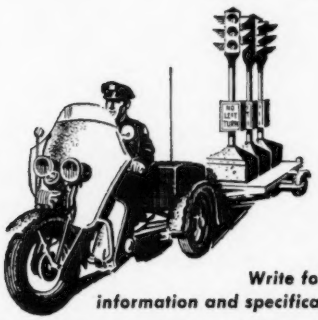

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TRAFFIC NEWS

Todd Becomes ITE Executive Secretary

Melville Mansfield (Tim) Todd has been employed by the Board of Direction to become the full-time executive secretary of the *Institute* starting May 1, 1952. Mr. Todd has been associate traffic engineer in the Division of Traffic and Planning of the Virginia Department of Highways since 1943. He is an Associate member of the *Institute*.

M. M. (Tim) Todd

Fred W. Hurd

His employment terminates a temporary arrangement in the operation of *Institute* headquarters since April, 1951. At that time Mr. Robert S. Holmes was granted a one year leave of absence by the Board of Direction to take a position with the Federal Civil Defense Administration. To replace Mr. Holmes in *Institute* headquarters, Mr. Fred W. Hurd, associate professor, Yale Bureau of Highway Traffic, was "drafted" to serve as executive secretary on a part-time basis. Last January, Mr. Holmes, Deputy Director, Engineering Service Division, Federal Civil Defense Administration, resigned as executive secretary, on leave, thereby terminating the temporary arrangement.

Following Holmes' resignation, Hurd advised the Board that his dual role with the *Institute* and Bureau was too strenuous to be continued. He teaches "Traffic Design and Location" as a part of the Bureau traffic engineering course and in addition to traffic research is currently engaged in writing the highway design portion of a text on traffic engineering to be published by the Bureau. In view of these commitments, he recommended to the Board that a new *full-time* executive secretary should be employed.

Todd has had a versatile experience with the Virginia Department of Highways, which he first joined in 1924 as a member of a survey party. He was promoted successively to levelman, transitman, and in 1932, to chief of party. In 1938 he transferred from the Survey Division to the Construction Division, and one year later was made resident engineer over three counties. He was transferred to the Highway Planning Survey in 1943 and became the highway department's first associate traffic engineer that year when the Division of Traffic and Planning was created. Under this capacity he has been in direct supervision of warrant application, design, installation and operation of all traffic control outside of cities on the state highways of Virginia.

Among his accomplishments, Todd participated in the development of a master plan for Virginia's secondary highways and in the development of Virginia's first state-wide master plan, "A 20 Year Plan for the Development of Virginia's Highways." He also handled the project of selecting and securing Federal approval of the State's first Federal Aid secondary system; participated in the planning of a complete centralized punch card accounting system for the highway department and directed the detailed preparation of Virginia's first "Manual on Traffic Control Devices."

Todd supervised the design and installation of the first system of intersection control, reversible lane, traffic signals for three-lane roads. He delivered papers on this system at the 1949 ITE annual meeting and the meeting of the Highway Research Board in 1951. He was appointed co-chairman of the Street and Highway Section of the Virginia State-wide Safety Conference in 1950, and director, for Virginia, of the Southern Safety Conference in 1952.

Tim Todd is married and has two children. He will move his family to New Haven as soon as housing arrangements are completed.

Yale Student Chapter Elects Officers — Fall Term

The Yale Student Chapter of the ITE has announced its officers for the Spring Semester. They are: Richard R. Long, Washington, President; Marcel J. Jenni, Switzerland, Vice-President; Robert A. Keith, Massachusetts, Secretary-Treasurer. F. Houston Wynn, Assistant Professor of the Bureau, continues as faculty advisor.

The Chapter has continued its program of social and technical activities from the Fall Semester under the direction of John I. Logan, of Massachusetts, as Business Chairman, and Warren E. Schreiber, also of Massachusetts, as Social Chairman. The Chapter has enjoyed attending the meetings of the New England Section of the ITE throughout the year. A highlight of the year's activities was the attending of the January meeting of the Highway Research Board, in Washington, D. C., by the entire Chapter.

Seburn Named Director Of Traffic Department

Thomas J. Seburn (Mem., ITE), Traffic Engineer, Kansas City, Missouri, was named Director of a new Traffic Department in Kansas City on April 8, 1952.

The new Department was created by an amendment of the Administrative Code which repealed that section of the Code relating to the previous Traffic Engineering Division. In part, the amendment is written as follows:

"Vehicular traffic in Kansas City has increased to such an extent and involves the necessity for making provision for off-street parking facilities, particularly in locations where private operators have failed to meet the demand for needed facilities, and it is deemed necessary to establish a new department of the city government to have supervision and control of traffic regulations and also of certain off-street parking facilities of the city.

"Therefore, be it ordained by the Council of Kansas City that pursuant to provisions of the City Charter there is hereby established a new department of the city to be known as the Traffic Department which shall be under the supervision, control and management of a director appointed by the City Manager. The director, by training and experience, shall be familiar with basic engineering principles and with the special requirements of traffic and transportation movements and parking requirements. The director shall appoint such subordinates and clerical employees as may be required to carry out the purposes of this article and for whom appropriation of funds may be made by the Council."

The amendment charges the Director of the Traffic Department with the following duties:

(a) He shall conduct studies of street traffic accidents, traffic congestion and other conditions affecting the safe and convenient use of the streets; shall collect facts regarding the effect and operation of regulations controlling street traffic; shall make recommendations to the City Manager concerning legislation or construction affecting the safe and convenient use of the streets; shall supervise the placing, maintenance and operation of traffic signs and signals and control devices installed and be in charge of the installation thereof, and shall audit all bills for lighting the same.

(b) He shall keep an accurate record of the number, type and location of all electric lights, and other means adopted for lighting the streets and public areas within the city limits. He shall audit all bills rendered to the city for lights and lighting furnished to the city and his approval shall be required before any bill for such service shall be paid. He shall enforce compliance with the provisions of contracts for the construction, installation, and servicing of lights and light standards, and shall secure compliance with all ordinances in regard to street lighting; he shall make recommendations from time to time as may be found necessary for the location or relocation, or the removal of lights which heretofore have been located and shall prepare the necessary plans and orders for location, relocation or removal.

(c) He shall cooperate with other departments in the design of street improvements and shall make recommendations concerning roadway widths, intersection design, grades and similar operational characteristics.

(d) He shall make a continuous study of public and private off-street parking facilities and from time to time report to the City Manager as to the necessity for the establishment of additional off-street parking facilities.

(e) He shall encourage the development of off-street parking projects by private operators and shall cooperate with private operators by furnishing them the results of traffic studies and other information available relating to the design and operation of off-street parking facilities.

(f) He shall be in control of such off-street parking facilities as the city may from time to time acquire and shall execute leases to private operators of such facilities as the Council deems should best be operated by private operators and shall enforce such leases and collect the rentals therefrom.

(g) He shall prepare preliminary plans for off-street parking facilities, showing type of facility and parking arrangement and shall approve final construction plans. Contracts for actual construction shall be prepared and supervised by the Department of Public Works.

(h) He shall operate, maintain and collect the revenues from such off-street parking facilities as the Council may deem most expedient to have operated by the city.

Barnes Wins "Getting Results" Award

Henry A. Barnes (Mem., ITE), Director, Traffic Engineering Division, City and County of Denver, received the award offered each year by the Association of Casualty and Surety Companies for his entry in the third annual "Getting Results Through Traffic Engineering" contest. Barnes' entry showed how a serious traffic problem, which had caused injuries to two pedestrians and 34 other accidents involving approximately $1,700 property damage in collisions at a boulevard intersection, had been solved by enforcement of new parking regulations and the installation of standard parking and reflectorized "stop" signs costing less than 5 per cent of the accident damage incurred in six months.

During the six months after Barnes put into effect his plans to stop the many accidents that had occurred at the intersection of Spear Boulevard and Stout Street in Denver, not a single collision occurred there and no pedestrians were injured. Part of his solution was to eliminate uncontrolled parking at the intersection's crosswalks, that had seriously reduced the sight distance of drivers on the street approach to the boulevard. Curb parking was prohibited a sufficient distance back from the intersection to permit adequate sight distance for safety. Standard no parking and stop signs completed the project.

Mr. Barnes' highly successful project was one of more than 100 examples of traffic engineering published regularly by the Association's accident prevention department during the last decade to guide safety engineers and officials in ways to reduce the toll of deaths, injuries and property damage in highway accidents. Through these case histories, sent without charge to several thousand key officials interested in highway safety, traffic engineering know-how has been put to work on a broad scale in thousands of cities and on rural highways.

Television in Cars Prohibited

Television receivers in motor vehicles are prohibited by a Kentucky law except where a permit from the Commissioner of State Police has been issued, while a Mississippi measure would prohibit installation in view of the operator. A similar proposal "died" in South Carolina.

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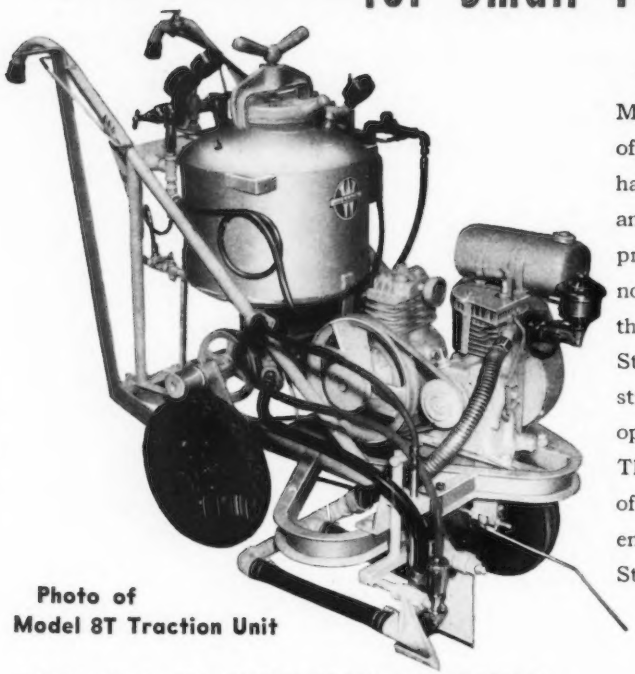

Photo of
Model 8T Traction Unit

The *New* Wald Reflecto-Liner Model 8 is the only Striping Machine of its size designed especially to handle reflective binders, compounds and plain traffic paints. Striping problems of small towns and cities now simplified through the use of the Model 8 and 8T Striper. This Striper will do jobs that the average striper cannot do . . . and can be operated manually or by traction. The Model 8 Striper embodies most of the engineering features now present in the larger Model 12 Heavy Striper.

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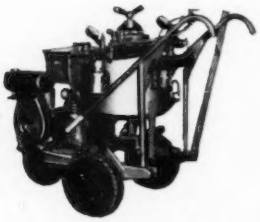
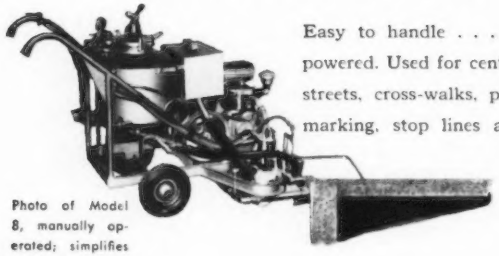


The Wald Reflecto-Liner Model 8T and 8 are the most up-to-date municipal traffic stripers.



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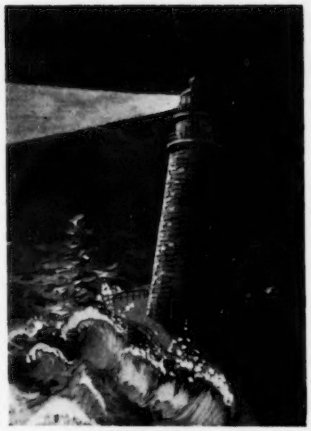

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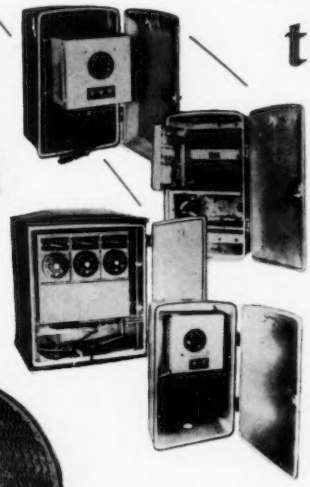

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Items of Current Interest On State Traffic Engineering in Colorado

The Department of Highways is accelerating the development of its "Manual on Uniform Traffic Control Devices for Colorado's Streets and Highways" for release this year soon after the State Model Traffic Ordinance is submitted for adoption by reference to Colorado's incorporated towns and cities. Preparation of the State Uniform Manual has been undertaken by the Traffic Operations Section of the Department's Planning and Research Division.

Special care is being exercised to apply national uniform standards to local conditions and statutory requirements in order to implement the relationship between the State version and the parent manual prepared by the Joint Committee on Uniform Traffic Control Devices and its sponsoring agencies. In addition, the State Manual will cover both urban and rural practice and, by agreement with the Engineering Section of the Metropolitan Traffic Safety Conference, will be reviewed by that body before issuance. According to a recent survey (National Sign Shop Practices and Organization) conducted by the AASHO Committee on Traffic, Subcommittee on Traffic Control Devices, twenty-seven (27) States have now developed their own Uniform Manuals.

The $6,300,000 Denver-to-Boulder Turnpike providing a 17.3 mile artery of twin-concrete ribbons between the two growing centers of population has the distinction of being the West's first modern toll road. From a traffic engineering viewpoint, this four-lane highway marks a new advance for safe, comfortable, and efficient transportation in the Rocky Mountain Empire.

Each concrete roadway of the dual-highway is twenty-four feet wide, giving two twelve-foot lanes to each ribbon, one for traffic and one for passing. Separating opposing streams of traffic are twenty-foot median strips depressed to catch runoff for drainage and equipped with spaced drains. Full ten-foot shoulders border the roadways on the outside. Right-of-way purchases along the route range from 200 feet to 400 feet for lowland level stretches and hill approaches and crests respectively. Twelve major structures including the toll house and bridge, eight underpasses, and two overpasses add to the complexity of the project.

With the exception of the necessary channelization at the terminal points of entrance and egress and the midway interchange where the toll booths are located, the turnpike facility offers no impediments whatsoever to the expeditious movement of traffic and saves the motorist about eight miles and 25 minutes of travel from the trip along the old meandering route, an out-of-the-way burdensome road with sharp right-angle turns.

A minimum of speed restriction is imposed on the turnpike by a posted 65 MPH limit with step-down speed zones at the approaches to the interchange and terminal limits of the new facility. This 65-mile speed posting was made possible by an Act of the last Colorado General Assembly authorizing the Department of Highways to increase the prima facie limits whenever the Department shall determine upon the basis of an engineering and traffic investigation that any prima facie speed previously set forth is *less* than is reasonable or safe under the conditions found to exist. The present Act constitutes an amendment of previous legislation which merely permitted the Department to lower the prima facie speeds below the maximum allowable 60 MPH.

A significant sidelight from enforcement experience was the necessity of erecting legal Stop signs at the toll booths to discourage some motorists who demonstrated a remarkable enthusiasm to accelerate their vehicles through the toll lanes without rendering the State its duly assessed toll levy.

Evidence of the fact that the Department does not consider the premium-type highway sufficiently fool-or accident-proof to eliminate the human factor is the current installation of mileposts to permit official traffic-accident investigators to identify the location of accidents as they may occur. Distinctive colored posts, eight feet long and four inches in cross section are being erected at intervals of one mile along the entire 18-mile stretch of highway.

Traffic Engineering Agency Recommended In Salt Lake Survey

Establishment of a Traffic Engineering Division under supervision of the City Engineer has been recommended to Salt Lake City, Utah, as the result of a recent technical study of the traffic problem there.

Conducted under the direction of D. Grant Mickle, Director, Traffic Engineering Division, Automotive Safety Foundation, at the request of the Board of City Commissioners, the study covered traffic conditions and administrative practices, laws and ordinances relating to traffic, and the parking problem.

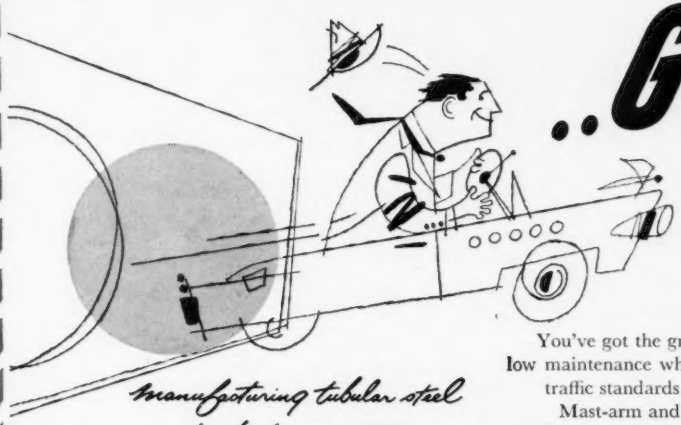
A number of Salt Lake City's major streets were found to have traffic volumes exceeding their practical capacity, and other arteries were approaching that point. Increases in population and motor vehicle registrations, and rapid development of suburban areas, the study report points out, have greatly increased the demand on the city's street system.

The report, "Spot Lighting the Traffic Problem in Salt Lake City, Utah," recommends that the new Traffic Engineering Division, which would be in the Department of Streets and Public Improvements, conduct studies of need, and plan, coordinate, control and carry out all phases of street and parking improvement programs. Traffic engineering functions formerly invested in the Police Department would be transferred to the new division.

A new proposed traffic ordinance should be revised to conform to the Model Traffic Ordinance, state law and study recommendations, and then adopted, the report recommends. New studies on origin and destination of traffic are urged, with the studies extended into newly developed areas to provide factual basis for improvement of street and highway routes.

The report recommends that the city and state join in a comprehensive study of parking needs to develop a sound program of improvement. The present City Traffic Commission of the Department of Public Safety should be recreated, the report states, as a Traffic Advisory Committee to the Board of Commissioners to study and report on all phases of the traffic problem and to develop support for sound official programs of traffic and safety improvements.

Recognizing Salt Lake City's rising traffic accident record, the report called attention to the need for adequate enforcement of traffic laws and advised that unadopted recommendations of a 1947 enforcement study by the International Association of Chiefs of Police be modernized and reconsidered.



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1824 EAST SECOND STREET WICHITA, KANSAS

Special Radio System Installed in New York's Lincoln Tunnel

A traffic aid radio broadcasting system has been inaugurated on a six-month test basis in the south tube of the Lincoln Tunnel as a public service. In a postcard poll twelve out of thirteen tunnel users advised The Port of New York Authority they liked the broadcasts and wanted them continued on a permanent basis. Users of the New York-bound tube may receive tunnel traffic announcements, broadcast at regular intervals twenty-four hours a day, by tuning to 550 on their automobile radio dials. In emergencies causing traffic stoppages, tunnel police can make immediate announcements.

Reception of regular radio station broadcasts is not possible in tunnels without special equipment. The Port Authority is therefore experimenting with a unique radio service to give traffic advice and information to motorists. The broadcasts are transmitted by a loop antenna installed under the Lincoln Tunnel ceiling. Ordinarily, broadcasts are tape recordings. Tunnel police can break into the recording with emergency spot announcements by voice or by quickly inserted new tape. The system is powered by a 400-watt transmitter located in the tunnel's New Jersey ventilation building. The master control unit used to monitor the programs is in the tunnel police captain's office in the administration building at the New Jersey plaza.

Radio announcements are given every two and a half minutes. The following one is typical:

"Lincoln Tunnel motorists, your attention please. For your own safety and comfort please observe tunnel traffic regulations. Avoid accidents by staying in line. Don't crowd the vehicle ahead. Keep your speed down to thirty miles per hour. At this speed—for safety's sake—stay seventy-five feet behind the car ahead. Thank you for your cooperation."

The Port Authority conducted the poll to determine how feasible the radio service is and how well it is being received by those it is designed to help. Survey postcards asked a single question: "Would you like this Port Authority radio service as a permanent service at the Lincoln and Holland Tunnels? Of the 2,198 motorists who responded, 2,022 voted "yes" and 176 "no." The postcards were distributed at the Lincoln Tunnel's New Jersey plaza on January 7 and 16.

Two hundred and twenty-two noted on the cards they returned that the broadcasts would be especially appreciated in emergencies. Another sixty-five thought they should be extended to the tunnel approaches and give road information. Ninety-one suggested changes in the type of music used between traffic announcements, and fifty-seven asked that weather reports, news and tunnel statistics be included. A hundred and six said they had difficulty in getting good reception regularly, fifteen asked that commercials never be used, and a dozen said they like regular radio station broadcasts better.

Traffic Engineering Lectures Initiated in Switzerland

A series of lectures on traffic engineering have been inaugurated under the auspices of the Swiss Road Federation, the Swiss Union of Road Technicians, and the Swiss Bureau for Road Accident Prevention. More than 300 persons attended the opening lecture.

Subjects to be covered in the series include:

"Possibilities and Limitations in Accident Prevention"; "Analysis of Road Traffic"; "Traffic Engineering, Its Development in the U.S.A. and Application in Switzerland"; "Traffic Security and Modernization of Towns"; "Traffic Safety Through Road and Intersection Improvements"; "Parking Problems"; "Basic Principles of Automatic Traffic Controls"; "Road Surfacing and Safety"; "Road Markings"; "Regular Inspections of Motor Vehicles"; "Traffic Regulations and Speeds", and "The Teaching of Traffic Engineering."

British Trucking Rates Increased

The Road Haulage executive of Great Britain has announced an average increase of 7½ per cent in road-haulage rates. The increase is said to have been necessary because of higher wages, costs and other expenses. Some £5,000,000 additional annual revenue is expected.

Some sources believe that the real reason for the increase is the continuing loss in State-owned transport. The large Road Haulage Executive staff averages almost two persons per vehicle in operation, as compared to 1.2 for counterpart private enterprise.

Transfers

FRAVEL, DEAN H. JR.—Junior to Associate

GOODWIN, CHARLES A.—Junior to Associate

RAY, JAMES L.—Junior to Associate

THILLAINAYAGAM, R.—Junior to Associate

New Members

CAMPBELL, EARL W. (Junior)
1201 Hunt Avenue
Charleston 2, West Virginia

CLYDE, MAX N. (Junior)
Traffic Engineer II
Michigan State Highway Department
Planning & Traffic Division
Lansing, Michigan

FISCHER, STEWART (Junior)
Acting City Traffic Engineer
City Hall, Military Plaza
San Antonio, Texas.
Garfield 3292, Ext. 224

MacDONALD, BRUCE B. (Junior)
118 Elk Street
Springville, New York

LENAU, RAY D. (Assoc.)
Assistant Highway Engineer
SEND MAIL: 700 Morey Avenue,
Del Paso Heights, California

MILLER, C. HAROLD (Junior)
City Traffic Engineer
Traffic Engineering Department
City Auditorium
Amarillo, Texas. 2-8785

POWILLS, MICHAEL A. JR. (Junior)
Traffic Engineer I
Bureau of Street Traffic
Room 709, City Hall
Chicago, Illinois.
Randolph 6-8000, Ext. 862

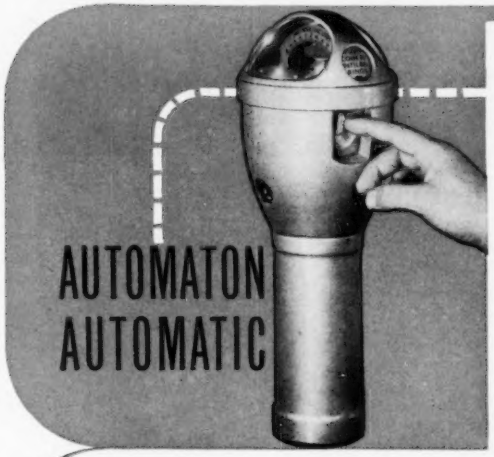
PRATT, CHARLES O. (Junior)
Junior Traffic Engineer
SEND MAIL: 173 Hoffman Avenue,
Trenton, New Jersey

RUDDEN, JAMES B. (Junior)
Electrical Engineer
City and County of Denver. Maine 1133
SEND MAIL: 3000 Pontiac Street,
Denver 7, Colorado

RUDY, BURTON M. (Junior)
Junior Highway Engineer
Conn. State Highway Dept., Dist. No. 1
500 Capitol Avenue
Hartford 15, Connecticut
Hartford 7-6341, Ext. 711

. . . of a series of talked-about features which progressive city officials look for and find in today's

No. 2 most talked-about and most-often bought meters



talked-about because it has

Features the Public Likes

ONE HAND CONVENIENCE like pushing a door bell, starts AUTOMATON. So effortless a 5-year old child can operate.

CYCLE-TONE SIGNAL BELL inside mechanism lets user know when meter is energized.

STRAIGHT-IN COIN SLOT, you can't miss seeing it. No searching to insert coin.

OUT-OF-ORDER TROUBLE FLAG pops into view when mechanism for any reason is out of order. Eliminates issuance of unjustified violation ticket by patrolling officer.

COIN GATE BLOCK safeguards loss of coin if meter is jammed. Meter will not accept a coin when trouble flag is showing.

talked-about because of its

Selectivity of Time, Rates, Coins

Only MILLER has this "engineered in" flexibility to make it adaptable, at minimum expense, for all street *and* parting lot installations. More than 40 different rate and time combinations available, from 1c for 12 minutes to 25c for 5 hours . . . using multiple coins. Many time-coin changes of the standard MILLER can be made by the maintenance man—a simple adjustment requiring no new parts; others require only slight parts modification. The MILLER will take PENNIES, NICKELS, DIMES, and QUARTERS, SINGLY OR IN COMBINATION.

Write for full details

also . . . *These two great meters offer many more features*

AUTOMATON. 100% automatic without winding expense . . . Gyp-proof slug detector and ejector . . . Easy-access screw-on top . . . One-unit lift-out mechanism . . . Unbreakable plexiglass window . . . Under-cover protection of rate and instruction plates . . . Patented collection system with extra large box.

MILLER. Latest improved wipe-off time feature that cumulates unexpired time . . . Double-flag facility . . . Out-of-order coin-slot closer . . . Double lock protected coin box . . . No-jam coin carrier . . . Weather-tight dependability in any climate . . . Long life durability.

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Manufacturers of AUTOMATON fully automatic and MILLER manual parking meters.

One-Week California Traffic Course

A one-week course in traffic engineering will be presented at the University of California, Berkeley, June 23 to 27. Registration will be accepted from any area. The fee will be $15, for which syllabus and text are included.

Being arranged by the University's Institute of Transportation and Traffic Engineering, the course will provide intensive coverage of fundamentals and current problems. Each day's schedule will be full and varied. Three principal instructors will present the major discussions. Then, at the end of each day, an hour will be set aside for those attending to discuss their own individual problems by appointment with visiting specialists. Several such specialists will be on hand during the week.

On a typical day, one-hour lectures, 10 minutes apart, plus morning coffee break and lunch, will run until 2:30 P.M. This program will be followed by a two-hour laboratory period, then the consultation hour.

The instructors will be Donald S. Berry (Mem., ITE), assistant director of the Institute of Transportation and Traffic Engineering; Norman Kennedy (Assoc. Mem., ITE), Institute associate engineer; and Ralph A. Moyer, Institute research engineer and former chairman of the Highway Research Board. The visiting specialists will come from various agencies throughout the United States.

Here are some of the major subjects: orientation in traffic engineering; characteristics of traffic volumes, speeds, and congestion; engineering for accident prevention; one-way streets and other traffic-control measures; parking; uniform control devices; highway capacity; geometric design; and traffic engineering administration.

In addition to the course content, those attending may benefit by two other events in Berkeley, with which the course program is being synchronized. One is a half-day conference being arranged by the Institute, June 27, at which Darel L. Trueblood, of the U. S. Bureau of Public Roads, Washington, D. C., will discuss "Assigning Traffic and Estimating Induced Traffic." The other is the meeting of the Western Section, *Institute of Traffic Engineers*, June 27-28.

Cooperating with the Institute in presenting the course are the California Division of Highways, the League of California Cities, and the Western Section, *Institute of Traffic Engineers*. The course will be administered by University Extension, University of California.

Course meetings will take place on the Berkeley campus, adjacent to which are convenient hotel accommodations.

Complete announcements are being mailed to road agencies throughout the 11 western states and selected national agencies. Anyone, however, may register or obtain additional information by writing the Institute of Transportation and Traffic Engineering, University of California, Berkeley 4.

LOOKING AHEAD

JUNE 5-7, 1952—SEATTLE, WASHINGTON
Western Association of State Highway Officials, Olympic Hotel.

AUGUST 24-27, 1952—LOS ANGELES, CALIF.
American Public Works Association, Ambassador Hotel, Shrine Auditorium.

SEPTEMBER 8-11, 1952—CHICAGO, ILLINOIS
Annual Meeting, Institute of Traffic Engineers, Hotel Sherman.

SEPTEMBER 8-13, 1952—CHICAGO, ILLINOIS
Illuminating Engineering Society National Technical Conference, Edgewater Beach Hotel.

SEPTEMBER 20-24, 1952—ATLANTIC CITY, N. J.
Annual Meeting, American Transit Association.

SEPTEMBER 21-25, 1952—LOS ANGELES, CALIF.
International Association of Chiefs of Police, Biltmore Hotel.

SEPTEMBER 28-OCTOBER 2, 1952—KANSAS CITY, MISSOURI
International City Managers Assn.

SEPTEMBER 29-OCTOBER 2, 1952—BOSTON, MASSACHUSETTS
Annual Convention, International Municipal Signal Assn., Inc., Hotel Statler.

OCTOBER 5-8, 1952—BOSTON, MASSACHUSETTS
American Society of Planning Officials, Copley-Plaza Hotel.

OCTOBER 20-24, 1952—CHICAGO, ILLINOIS
40th National Safety Congress and Exposition of the National Safety Council.

OCTOBER 22-26, 1952—CHICAGO, ILLINOIS
American Trucking Association—18th Annual Convention, Stevens Hotel.

NOVEMBER 19, 1952—NEW YORK, N. Y.
34th Annual Meeting, American Standards Association, Waldorf-Astoria Hotel.

Tape for Temporary Street Markings

The use of pressure-sensitive tape for temporary street markings, is helping to "minimize congestion and speed up through traffic" in the business district of the Village of Elmhurst, Illinois.

Initially used in conjunction with a recent one-way street improvement, the tape was applied over a 2½ block area to test the effect of proposed new markings on the flow of pedestrian and vehicle traffic.

Advantages reported by a member of the village's city council, were: (1) The tape was applied in a matter of minutes without disrupting the normal traffic flow; (2) traffic passing over the tape helped press it more firmly to the pavement; (3) maintenance crews were able to make on-the-spot alterations to further smooth out the flow of traffic; (4) weather had little effect on the tape following its application to dry street surfaces; (5) the markings retained their usefulness for about a week's time; and (6) the cost, including labor, was approximately $15.

Belgium Prepares Modernization Program

M. H. Hondermarcq, director Belgian roads, has announced a 15-year program for modernizing highways in Belgium.

The plan provides for:

An expressway system of 930 kilometers, four lanes or more, 3.75 meters land width; a primary system of 1,800 kilometers, three to four lanes, 3.50 meters lane width; a primary network, two lanes, 3 to 3.50 meters lane width; and a secondary system of 13,000 kilometers, two lanes, three meters lane width.

Development of the expressway system will entail new construction. The network will be incorporated as part of the International European Road System.

SECTION NEWS

Midwest Section

The March meeting of the Midwest Section was held at the Chicago Engineers Club with over 30 members in attendance. After an excellent chicken dinner, Mr. John A. Ainlay, Executive Secretary of the American Petroleum Industries Committee, amazed and bewildered all the members with his feats of magic.

Mr. Ainlay is a member of the American Society of Magicians and also The Brotherhood of Magicians. Everyone present enjoyed Mr. Ainlay's interesting tricks and patter. Afterwards Matt Sielski, Chairman of the Convention Finance Committee, was seen in a corner with Mr. Ainlay trying to learn how he changed those pennies into quarters.

During the business portion of the meeting it was decided that because of the pressure of convention business there would be no planned programs at section meetings until after the convention.

The Membership and Attendance Committee under the leadership of Evan Olmstead reported that they have worked out an application form and a membership card for this section, in order to obtain necessary information regarding the membership and to maintain the organization on a more formal basis.

The special committee on revising Constitution and By-Laws presented a draft of a new Constitution and By-Laws. Considerable discussion was devoted to this matter. It was decided to mail copies of a revised draft to all the members and a final vote will be taken at the April meeting. At that time the Board of Direction of the ITE will be meeting in Chicago and it will be possible for approval of that body to be obtained immediately after approval by the section.

Reports of Convention Committees were given. Copies of "Biscuit Banter" were distributed. This news letter contained reports of Committees' activities and will be regularly distributed to members of the section to keep them up to date regarding the progress of the Convention Committees.

Reported by Ralph F. Gross
Secretary-Treasurer

Washington, D. C., Section

The Washington Section met Wednesday, March 12, 1952, for cocktails and dinner at the New Athens Restaurant, 1741 K Street, N.W. During the business portion of the meeting, O. K. Norman, ITE Representative of the Education Committee of the Architectural and Engineering Council for the District of Columbia, reported on the efforts of the Man-power Commission to get more young men interested in studying engineering in college. The shortage of qualified engineers is critical and is causing delays in the defense effort. The council for the District of Columbia is planning to get qualified men from the various societies that form the council to give talks about engineering in the high schools in an effort to encourage young men to follow this profession. Also they plan to assign one man to each school as a liaison officer to work with the school officials and students.

Don Loutzenheiser read a letter from the editor of *"Traffic Engineering"* explaining why the Washington Section News failed to appear in the last two issues.

The guest speaker of the evening was Mr. H. E. Hilts, Deputy Commissioner of the Bureau of Public Roads and the U. S. Representative on the United Nations Committee on road signs and signals. Mr. Hilts explained what was being done to encourage standardization of traffic signs, markings and signals in all countries. The American stop sign, he explained, is quite generally used and considerable progress is being made on other portions of the standardization program. Color slides were shown on typical usage of signs, signals, markings, both here and abroad.

Reported by W. D. Heath
Secretary-Treasurer

Legal Battle Over Public Garage Ends

A 15-month battle to prevent the City of Hartford, Connecticut, from building a $3-million public parking garage was waged by the commercial parking lot operators of the city. They lost recently when the Connecticut Supreme Court of Errors, in an unanimous decision, held that the voters legally approved the project at a disputed special election on November 7, 1950.

Cataphote is ready with reflector type, and plain enamel signs, to fulfill sign programs for any street or highway requirement. Whether you need one, twelve, or one hundred signs, we have them for you. Cataphote signs meet all U. S. Standard Specifications for size, shape, colors, legends, and materials.

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REFLECTIVE SHEETING

American motorists appreciate good roads: roads that are well-planned, well-built—and *clearly marked.*

New standards of design are meeting these requirements...and progressive states have extended this trend into their signing programs—with *color!*

These highway officials are turning to reflective signs *color-keyed* for statewide uniformity. The Maine Turnpike sign illustrated above employs a rich Parkway Green background with contrasting Silver legends. Easy to see, easy to recognize, these signs have greater attention value—quickly arrest the attention of the most fatigued driver. And, they complement the highway's natural scenic beauty.

Meeting these advanced sign standards, "SCOTCHLITE" Flat-Top ® Sheeting offers a complete range of color opportunities—for any signing program. Here are signs that will reflect credit upon your highway program—build better public relations for you and for your state. So, for signs that meet modern highway standards of safety, visibility and beauty—write today for complete information on reflective signs in *color.*

COLOR-KEYED for instant recognition, this sign attracts the motorist, warns him in ample time.

AT NIGHT, sign reflects same size, same shape, same *color* as during daylight hours.

RAIN, SLEET, SNOW don't affect visibility. Full color reflection means instant recognition.

WRITE TODAY for complete information on how to produce colorful reflectorized signs...right in your own shop! Address Minnesota Mining & Mfg. Co., Dept. TE52, St. Paul 6, Minn.

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Made in U.S.A. by Minnesota Mining & Mfg. Co., St. Paul 6, Minn.—also makers of "Scotch" Brand Pressure-sensitive Tapes, "Scotch" Sound Recording Tape, "Underseal" Rubberized Coating, "Safety-Walk" Non-slip Surfacing, "3M" Abrasives, "3M" Adhesives. General Export: 270 Park Avenue, New York 17, N. Y. In Canada: London, Ont., Can.

Secretary's Column

Elsewhere in this issue is an announcement that M. M. (Tim) Todd became your Executive Secretary at the beginning of this month. Your Secretary of the past year is again devoting full-time to his regular job with the Yale Bureau of Highway Traffic.

As your Secretary during the past year, I wish to thank the *Institute* for the opportunity I have had to serve as its Executive Secretary. The experience has been very interesting and broadening to me. The Officers and Board of Direction have been most patient and considerate under the handicaps associated with a part-time Secretary. The friendliness and helpful cooperation of all of the *Institute's* members, and others, have been gratifying and heartwarming. The loyalty and efficiency of the office staff has been a great help in maintaining the activities of Headquarters Office under a part-time Executive Secretary and reduced operating expenses.

After my year of experience in the ITE Headquarters Office, I can assure every member that the volume of business conducted by our organization requires the services of a full-time Executive Secretary. It was naturally with some degree of reluctance that the University agreed on my part-time arrangement in order that the *Institute* would be served during Bob Holmes' leave of absence. It soon developed that an increasing amount of time, including nights and weekends, was required on ITE matters. The *Institute* is expanding rapidly and, without question, a full-time Executive Secretary is needed to help develop its full potential.

The *Institute* is fortunate in obtaining the full-time services of Tim Todd who is eminently qualified for the job. Your Secretary for the past year assures you that he will pass on to him the operations of the Headquarters Office without interruption of services.

FRED W. HURD

When You Change Your Address

. . . please notify us promptly. Your copies of "Traffic Engineering" will then reach you without delay and without interruption.—Traffic Engineering Magazine, Strathcona Hall, New Haven 11, Conn.

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LOS ANGELES, CALIFORNIA
TRAFFIC ENGINEERING ASSOCIATE

Duties

Moderately difficult professional traffic engineering work in making studies, investigations, and recommendations on traffic problems; in supervising the collection of field data; and in reviewing recommendations made by subordinates; and does related work as required.

Requirements

Graduation from a school of engineering in a college or university of recognized standing and at least three years of professional traffic engineering experience or their equivalent. Experience of the specified type may be substituted on a year for year basis for the required education.

Salary

$417 to $516 Per Month.

Apply

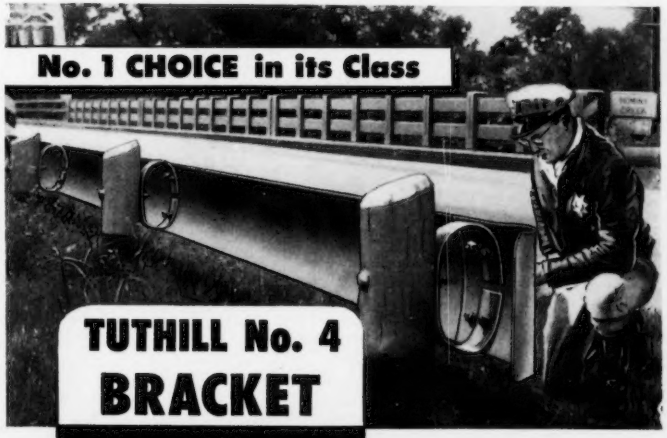
Civil Service, Room 5, City Hall, Los Angeles 12, California. Last date to apply June 2, 1952.

Thirty-first Annual Conference of W.A.S.H.O.

Mr. W. A. Bugge, Director of Highways for the State of Washington and President of the Western Association of State Highway Officials, has announced that the Thirty-First Annual Conference of the Western Association of State Highway Officials will be held in Seattle, Washington, at the Olympic Hotel, on June 5th, 6th and 7th, 1952.

Mr. William C. Pedersen, of the Washington Department of Highways, has been appointed General Chairman of the Conference and will coordinate the activities of those appointed to assist him.

A well-rounded program, including discussions of problems facing the highway programs in the various states and the efforts being made to solve them, will be presented. To combine pleasure with business, the extraordinary social functions will include a yacht trip to inspect outstanding Puget Sound Bridges and the Naval Shipyard at Bremerton.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ON THE SHELF

Compiled by

Mrs. Kathryn Cassidy, Librarian
Yale Bureau of Highway Traffic

Price, Harry O.

The Effect on Vehicle Speeds of a Speed Zone Ahead Sign and of Speed Numerals Painted on the Pavement: a Report of Research Undertaken in Course T. E. 299A at Berkeley. The Institute of Transportation and Traffic Engineering, University of California, 1951. 30p., mimeo. (Student Research Report No. 1.)

"The primary object of this project was to develop a technique of instrumentation and analysis for a study of the effectiveness of a SPEED ZONE AHEAD sign, and of speed numerals painted on the pavement."

Transeau, T. Elmer.

Speed! Still Public Enemy Number One. Pennsylvania Bureau of Highway Safety. Department of Revenue. The Department, 1951. 24p., pamphlet, processed, tables.

Statistical analysis of speed as a contributory cause of accidents. Supplementary to "Speed! Public Enemy No. 1" by author, 1950.

Halaas, E. T.

Financing City Streets and Highways in Colorado; a Preliminary Report. Colorado Municipal League, 327 Norlin Library, Boulder, Colorado. 1950. 39p., tables, charts.

An analysis of street finance, "based largely on a sample of 40 cities considered to be representative of all cities in the state." The sample includes the three largest and thirty-seven others, classed by population numbers. The study of receipts and expenditures is exclusive of receipts or expenditures from bond funds, but includes debt service on bonds. It presents expenses paid from revenue.

Moyer, Ralph A.

Recent Developments in the Measurement of Road Roughness and Skid Resistance. (Preliminary draft). Paper to be presented at the Annual Meeting of the Association of Asphalt Paving Technologists. Institute of Transportation and Traffic Engineering, University of California, Berkeley. 1951.

National Safety Council. Committee on Tests for Intoxication.

Uses of Chemical Tests for Intoxication, 1950. The Council, 1951. 9p.

A report on the number of cities which have used chemical tests for intoxication in 1950, giving the number of tests given in each city, the number of arrests resulting, the number of convictions, the percentage of convictions, the number of arrests with no test given, and the types of test used.

National Technical Canference of the Illuminating Engineering Society.

Proceedings. The Society, 1860 Broadway, New York 23, New York. 1951. $2.00.

A collection of thirty-five preprints of papers presented at the conference in Pasadena, August 21-24, 1950. The papers are technical treatments of lighting problems and principles for home, public buildings, aircraft landing fields, and streets and highways.

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DUR-O-LINE TRAFFIC LANE MARKERS

SAMPLE ORDERS AVAILABLE
200 DUR-O-LINE markers (white or yellow) with 200 asphalt pins and adhesive for installing.
$52.00 Postpaid

The famous DUR-O-LINE Lane Marker, that has done so much to reduce the cost of traffic lanes, is now available made of a new, flexible, unbreakable plastic. Put them down once . . . your traffic lines are bright and clear for years to come without further attention! You'll want these new *Flexible* DUR-O-LINE Markers where traffic is heavy . . . they're just as easy to put down on concrete or asphalt as DUR-O-LINE *Rigid*. Write for complete details at once.

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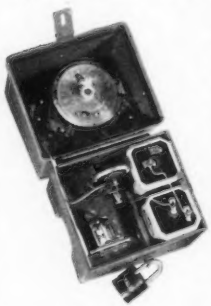
PERIOD COUNTER

The Period Control Traficounter (model PC) is a portable, automatic counter designed for use with a pneumatic type road tube. The special feature of this model is its ability to receive counts during any portion or period of the day.



It may be turned on and off automatically at predetermined intervals. Thus a set of *Period Control Traficounters* may be correlated by a single operator and readings taken at any convenient time.

The Period Counter is made to give only one count for every two vehicle axles to pass over the road tube.

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ARMOR-FLEX TRAFFIC PRODUCTS 295
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